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ABSTRACT

A self regulation package was used to teach self control skills to eight learning disabled (LD) and two nonLD adolescents in an experimental high school setting. Students had histories of noncompliance and were described as nonfunctional in their previous schools. Treatment consisted of behavior contracting, self recording, self monitoring, and self reinforcement. Procedures were taught and reinforced in a series of student-teacher conferences. Programed self instructional materials in reading, writing, and math were used as dependent variables to assess the number of lessons completed per student/per day. Results indicated that both LD and nonLD students increased their academic productivity. Statistical data, record and work sheets, and checklists are included. (Author/SB)

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THE EFFECTS OF SELF-REGULATION TRAINING ON THE ACADEMIC PRODUCTIVITY OF LD AND NLD ADOLESCENTS

Gary O. Seabaugh and Jean B. Schumaker

Research Report No. 37

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The University of Kansas Institute for Research in Learning Disabilities is supported by a contract (#300-77-0494) with the Bureau of Education for the Handicapped, Department of Health, Education, and Welfare, U. S. Office of Education, through Title VI-G of Public Law 91-230. The University of Kansas Institute, a joint research effort involving the Department of Special Education and the Bureau of Child Research, has specified the learning disabled adolescent and young adult as the target population. The major responsibility of the Institute is to develop effective means of identifying learning disabled populations at the secondary level and to construct interventions that will have an effect upon school performance and life adjustment. Many areas of research have been designed to study the problems of LD adolescents and young adults in both school and non-school settings (e.g., employment, juvenile justice, military, etc.)

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COOPERATING AGENCIES

Were it not for the cooperation of many agencies in the public and private sector, the research efforts of The University of Kansas Institute for Research in Learning Disabilities could not be conducted. The Institute has maintained an on-going dialogue with participating school districts and agencies to give focus to the research questions and issues that we address as an Institute. We see this dialogue as a means of reducing the gap between research and practice. This communication also allows us to design procedures that: (a) protect the LD adolescent or young adult, (b) disrupt the on-going program as little as possible, and (c) provide appropriate research data.

The majority of our research to this time has been conducted in public school settings in both Kansas and Missouri. School districts in Kansas which have or currently are participating in various studies include: Unified School District USD 384, Blue Valley; USD 500, Kansas City, Kansas; USD 469, Lansing; USD 497, Lawrence; USD 453, Leavenworth; USD 233, Olathe; USD 305, Salina; USD 450, Shawnee Heights; USD 512, Shawnee Mission; USD 464, Tonganoxie; USD 202, Turner; and USD 501, Topeka. Studies are also being conducted in several school districts in Missouri, including Center School District, Kansas City, Missouri; the New School for Human Education, Kansas City, Missouri; the Kansas City, Missouri School District; the Raytown, Missouri School District; and the School District of St. Joseph, St. Joseph, Missouri. Other participating districts include: Delta County, Colorado School District; Montrose County, Colorado School District; Elkhart Community Schools, Elkhart, Indiana; and Beaverton School District, Beaverton, Oregon. Many Child Service Demonstration Centers throughout the country have also contributed to our efforts.

Agencies currently participating in research in the juvenile justice system are the Overland Park, Kansas Youth Diversion Project, and the Douglas, Johnson, Leavenworth, and Sedgwick County, Kansas Juvenile Courts. Other agencies which have participated in out-of-school studies are: Penn House and Achievement Place of Lawrence, Kansas; Kansas State Industrial Reformatory, Hutchinson, Kansas; the U. S. Military; and Job Corps. Numerous employers in the public and private sector have also aided us with studies in employment.

While the agencies mentioned above allowed us to contact individuals and support our efforts, the cooperation of those individuals--LD adolescents and young adults; parents; professionals in education, the criminal justice system, the business community, and the military--have provided the valuable data for our research. This information will assist us in our research endeavors that have the potential of yielding greatest payoff for interventions with the LD adolescent and young adult.

ABSTRACT

A self-regulation package was used to teach self-control skills to eight learning disabled and two non-learning disabled adolescents in an experimental high school setting. Students had histories of noncompliance and were described as nonfunctional in their previous schools. The treatment consisted of the following self-control procedures: behavior contracting, self-recording, self-monitoring, and self-reinforcement. These procedures were taught and reinforced in a series of student-teacher conferences. Programmed self-instructional materials in reading, writing, and math were used as dependent variables to assess the number of lessons completed per student/per day. To ensure consistency and reliability, a series of outlines/checklists were used by both students, teachers, and observers. A multiple-baseline design scross academic areas was employed to assess the impact of the procedure on lesson completion in particular academic areas.

Results indicate that both LD and non-LD students increased their academic productivity (number of lessons completed). Treatment effects are evidenced in generalizations from one academic area to the next and self-initiation of increased student goals independent of a particular student-teacher conference in a few students. These behavior changes are encouraging in a population whose predominant disabilities are noncompliance, low productivity, and low grades.

THE EFFECTS OF SELF-REGULATION TRAINING ON THE ACADEMIC PRODUCTIVITY OF LD AND NLD ADOLESCENTS

Based on growing concern in education for programs designed to meet students' individual differences (DHEW, 1976) and the current mandate to educate learning disabled (LD) students in a "least restrictive environment" (PL 94-142), special educators can ill afford to neglect an emerging body of literature which suggests that individuals can be taught the use of self-regulation skills that may increase desirable self-initiative behaviors. Such skills, popularly described as "self-control" or "self-regulation" skills, include a variety of approaches: behavior contracting, self-recording, self-monitoring, and self-reinforcement. Each of these approaches deals with a particular aspect of the question: How do people integrate their environment with past experiences to form determinants for their own behavior? These procedures, used alone or in combination, are implemented on the assumption that an individual can be taught to identify and target a behavioral event, record and evaluate it, and self-administer some of the consequences surrounding that behavior.

Self-control models have been widely applied to treat a variety of dysfunctions in a variety of populations. For example, reduction of smoking (Harris, 1972; Moss, Lomax, Martin, & Prue, 1980), alcohol consumption (Kennedy & Gilbert, 1978), and body weight (Harris, 1971; Stuart, 1977) have been achieved via self-regulation treatment. Self-control procedures have been clinically applied to treat depression (Fuchs & Rehm, 1977), phobic behavior (Baker, 1973; Emmelkamp, 1972; Emmelkamp & Ultee, 1974; Goldfried, 1971), test anxiety (Meichenbaum, 1974). Furthermore, counselors have validated self-control techniques in the treatment of marital discord (Stuart, 1969) and wife abuse (LeCroy, 1980). In addition to the above examples taken

from the general population, attention has also been given to the efficacy of this treatment with retarded individuals (Coleman, 1980; Johnson & Whitman, 1980; Snow, Mercataris, Beal, & Weber, 1980). Finally, self-management skills have been commonly developed in the field of education, and various aspects of self-regulation have been taught alone or in combination to improve academic behaviors. For example, Gottman and McFall (1972) employed self-monitoring procedures to increase study behaviors; other authors have reported success with the use of behavior contracts (Kierschenbaum & Humphrey, 1980), self-reinforcement (Felixbrod & O'Leary, 1973), self-instruction (Blackwood, 1970), or combinations of these self-regulation components to obtain desirable changes in academic behaviors (Kempel & Collins, 1976; McReynolds, 1973).

O'Leary and Dubey (1979) described two areas of research in self-control. One involved the introduction of an independent variable by the experimenter or therapist (e.g., a particular behavior is modeled), while the dependent variables were the clients' participation in self-controlling behaviors following a stimulus event. For example, a client is instructed to make self-statements during anxiety-provoking situations such as public speaking or test taking (Meichenbaum, 1974). This type of procedure has been labeled "protracted self-control" (Kanfer, 1977). Protracted self-control teaches the subject to resist responses characteristically made in the face of ongoing stimulus presentation (Kanfer & Duerfeldt, 1968; Mischel & Gilligan, 1974). This also includes behaviors such as smoking, cheating, nail biting, and disruption. Most research in this area has been confined to laboratory analogue settings (Aronfreed, 1968; Bandura, 1969; Mischel, Ebbesen, & Zeiss, 1972).

A second area of self-control described by O'Leary and Dubey is research investigating procedures in which the subjects provide their

own behavior control programs. Decisional self-control (Kanfer, 1977) requires the individual to choose between two alternatives in a course of action (Grusec, 1968; Rachlin, 1974), one alternative being mutually exclusive of the other. That is, the independent variable is the client's use of self-controlling behavior. In this model, changes in dependent variables are indicated by such measures as the amount of time spent on task or the frequency and number of assignments completed. Decisional self-control may prove to be a useful intervention model for an LD adolescent, for example, because it may "break" historically determined contingencies before these can operate to inhibit academically desirable behaviors. Thus, use of decisional self-control can allow a student to break a chain of behaviors which has historically prohibited him or her from completing work.

Decisional types of self-control procedures generally target problem behaviors that are well established by prior learning, are motivated by immediate reinforcement, and are maintained by social or psychological contingencies (Kanfer, 1977). Casual observation of adolescents' resistance to study behaviors indicates the following: they have well established avoidance patterns; the patterns are under strong social control; and the immediate reinforcers (such as free time) are quite powerful. Self-regulational procedures focus on affecting a change from a well established comfortable behavior to one that may provide more delayed reinforcement.

Self-regulation procedures as a whole have gained popularity among educators because they are reported to promote a child's independence (O'Leary & Dubey, 1979). In addition, teachers who have taught self-regulation skills to their students report that after the intervention they spend less time controlling behaviors and more time teaching. Furthermore, there is evidence to suggest that a student's use of the skills can generalize to other settings

and perhaps other tasks (e.g., Bornstein & Quevillon, 1976; Drabman, Spitalnik, & O'Leary, 1973; Turkewitz, O'Leary, & Ironsmith, 1975). It has also been discussed that when stimulus control is transferred to the individual, that individual reports a "feeling of autonomy" or greater internal locus of control (Pawlick, 1976). Also, self-control procedures may be valuable in remediating problems of noncompliance by transferring stimulus control and subsequent "responsibility" to the students themselves. Finally, motivation studies with LD individuals have been largely ignored (Adelman, 1978); thus, there is a need for further research in this area.

Given the particular emotional (Bandura, 1969), social (Bronfenbrenner, 1970; Eisenberg, 1965; Erikson, 1963) and physiological (Tanner, 1961) changes adolescents are reported to undergo, it is important to find procedures that capitalize on these developmental events (i.e., the need for a feeling of autonomy; desire to be with peers) to teach appropriate means of goal achievement. As a teenager enters the adult world (through increased growth, mobility, intellectual awareness), his or her access to tangible reinforcers becomes greater. In addition, the adolescent begins to demonstrate an appreciation for nontangible reinforcers, such as social settings provide. A decreased demand for adult-determined, tangible reinforcers, coupled with an increased ability to obtain them, may cause the observed reinforcers in an adolescent's life to be difficult to obtain and possibly inaccessible for delivery by the adults in his or her environment. This problem is common to parents and educators of teenagers: a lack of control over the reinforcers that operate in the adolescent's environment.

These possible variables take on added importance because educational programs traditionally employed to control teenagers' behavior rely heavily on consequences supplied externally by parents (e.g., rewards) or school personnel

(e.g., special behavior modification interventions). With respect to motivation systems, the behavior control that special educators have demonstrated in younger children becomes diluted as the child's ability to obtain reinforcers increases and the child's appreciation of nontangible reinforcers develops. Thus, if adolescents are to participate in the adult world where it is desirable to deny oneself noncontingent rewards, the educators' task appears to be to teach students how to identify and contruct their own motivation systems.

Special educators may see additional benefit from self-control procedures in LD populations. In general, "normal" adolescents have been observed to exhibit problems in attention to task (McGhee, 1968). Locus of control studies suggest the LD student may have an even greater difficulty attending to task (Hallahan, Gajar, Cohen, & Tarver, 1978; Tarver & Hallahan, 1974). If LD adolescents do not perform academic behaviors, they may never come in contact with the possible reinforcers the stimulus materials supply. Furthermore, a student's lack of attention to task will reduce work completion, progression of academic skills, and isolate the student from possible long-range educational benefits. Consequently, successful implementation of a self-control procedure may facilitate goal achievement by increasing task behaviors and resistance to or avoidance of distraction.

Research suggests that a combination of self-regulation procedures produces the greatest maintenance of treatment effect (Bandura & Perloff, 1967). Thus, in this study, a behavior contract, self-recording, self-monitoring and self-reinforcement components were combined and delivered to increase adolescents' academic behavior.

An externally supplied stimulus (e.g., written behavior contract) is usually necessary to motivate an individual to undergo an initial behavior

change (Kanfer, 1977; Mischel, 1966), and behavioral contracts are commonly used in self-control programs (Spinelli & Packard, 1975; Wergel & Uhlemann, 1975). These are desirable tools in teaching self-regulation skills because contract negotiation clarifies the goals of the individual, outlines the requirements and consequences, facilitates personal choice, provides a motivational factor, provides for supporting contributions from others, and concretizes a previously vague intention to alter one's behavior (Kanfer, 1977).

The behavior contract provided an introduction for a second component, self-recording training. Although research suggests that recording alone will not insure behavior maintenance (Kanfer, 1977), recording is a necessary condition for self-evaluation of an ongoing behavior. Once a behavior is targeted and measured, a criterion for future performance can be established. Some authors have suggested that self-determined criteria established for evaluation may strengthen overall compliance with self-regulational programs (Masters, Furman, & Barden, 1977). Consequently, it is recommended that self-established criteria and a self-evaluation component be combined with recording. This combination has been found to be effective in two ways. First, by self-evaluation, the student gains awareness of his or her present functioning and rate of goal acquisition in a particular area. Second, the student becomes more sensitive to the possible reinforcers that may operate in his or her life.

A final component (popularly used), self-reinforcement, is perhaps the most difficult procedure to train and substantiate. Theoretical discussions by Bandura (1967), Cantania (1975) and Golddiamond (1979) have pointed to the difficulties of describing self-reinforcement as well as the complexities of methodogically demonstrating its application. However, writers do agree that self-reinforcement can be studied when comparisons are made to self-established

criteria (O'Leary & Dubey, 1979) or when self-delivery can be observed. Furthermore, self-reinforcement is reported to provide motivation and maintenance in self-regulation procedures (Shaw & Uhi, 1971). The notion that one can be self-reinforced usually implies a self-imposed delay or deprivation of otherwise available reinforcers. In addition, self-reinforcement may involve tolerance of an aversive condition (i.e., studying) until criterion is met for reinforcement (i.e., leisure time).

An attempt to teach complex self-initiated behavior change to LD adolescents requires a delivery system that is sensitive to the population. A sequence of conferences was chosen for this study because the conference has been a popular way of initiating behavior change in educational settings. Furthermore, the conference situation can provide an information exchange that helps the teacher tailor this program to the individual student. Teenagers who have histories of learning problems generally have concomitant reading problems. Thus, a verbally-delivered treatment program is not only desirable but, in some cases, necessary to insure proper instruction.

It has also been suggested that teenagers are responsive to social situations that involve close relationships. Thus, counseling, which involves the establishment of a relationship, is a likely mode of delivery. Such a model is recommended because it encourages verbal interaction and empathic understanding, two necessary components for providing students realistic and relevant rationales for behavior change.

Finally, an effort to operationalize the conference situation has been made. Thus, a sequence of verbal interactions will ensure systematic delivery as well as an ongoing rapport-building endeavor that may facilitate ongoing conference sessions.

The purpose of this study was to assess the effects of a procedure that combined four previously tested self-control procedures with a teacher-implemented delivery system on the academic task completion of LD and non-LD adolescents.

Method

Subjects

Eleven adolescents enrolled in an experimental high school in Kansas City, Missouri served as subjects. All students had histories of noncompliance in the home and at school and were described as nonfunctional in their previous academic settings. The group of students included eight learning disabled and three non-learning disabled students. The LD group included seven males and one female. Their ages ranged from 14 years, 8 months to 18 years, 7 months ($\bar{x}$ = 16.7 years). The non-LD group consisted of two females and one male; their ages ranged from 14 years, 7 months to 16 years, 1 month ($\bar{x}$ = 15.3 years). The students in both groups represented a broad range of socio-economic backgrounds.

The learning disabled students were identified as such by administering the Woodcock Johnson Psycho-Educational Battery and the vocabulary and block design subtests of the WISC-R or WAIS (depending on the student's age). The results from these tests plus information regarding the student's educational history, family history and any evidence of physcial or sensory handicaps, or cultural, emotional, environmental or economic deprivation were given to a Validation Team. The Validation Team was composed of four members: two school psychologists and two certified LD teachers at the secondary level. The team members independently voted on each student's case after reviewing the student's file. In order to be classified as learning disabled, three of the four members had to vote affirmatively that a student was learning disabled.

The eight LD students' prorated IQ scores ranged from 88 to 117 with a mean of 102. Their reading achievement percentile scores ranged from 18 to 96 with a mean of 42. Their math achievement percentile scores ranged from 6 to 56 with a mean of 22. Their writing achievement percentile scores ranged from 8 to 46 with a mean of 21.

The non-LD (NLD) students' prorated IQ scores ranged from 88 to 117 with a mean of 106. Their reading achievement percentile scores ranged from 41 to 75 with a mean of 60. Their math achievement percentile scores ranged from 22 to 75 with a mean of 41. Their writing achievement percentile scores ranged from 17 to 59 with a mean of 44.

Other students in the school (5 LD, 4 NLD) who did not receive self-regulation training served as a comparison group. The ages of the LD comparison students (3 males, 2 females) ranged from 15.5 years to 18.2 years with a mean age of 16.5 years. The ages of the NLD comparison students (3 females, 1 male) ranged from 15.7 years to 18.9 years with a mean age of 16.5. The LD comparison students' prorated IQs ranged from 80 to 100 ($\bar{x}$ = 90); the NLD's prorated IQs ranged from 110 to 113 ($\bar{x}$ = 110). The LD comparison students' achievement percentile scores in math ranged from 4 to 36 ($\bar{x}$ = 24), in reading from 34 to 64 ($\bar{x}$ = 46), and in writing from 11 to 44 ($\bar{x}$ = 33). The NLD comparison students' achievement percentile scores in math ranged from 40 to 91 ($\bar{x}$ = 66), in reading from 37 to 87 ($\bar{x}$ = 59), and in writing from 41 to 80 ($\bar{x}$ = 66).

Setting

The study took place at the New School for Human Education (NSHE), in Kansas City, Missouri. It is a non-profit organization designed in 1975 to meet the special needs of adolescents who do not fit into "traditional" educational settings. The school is operated by a Master's degree level

guidance counselor. The governing body is a 15-member Board of Directors comprised of lay persons from the community, NSHE students, parents, professional educators, and certified psychologists. A small staff of graduate students provide tutoring services on a rotational schedule. The curriculum combines an ongoing counseling program with systematic presentation of academic learning materials, using a self-directed, individualized approach. Formal written consent for the research was given by the New School Board of Directors and participants in the study.

The study was conducted in an open classroom at the school. Students were allowed to enter or leave the classroom at their discretion, at any time of the day. The large learning room was equipped with long writing tables, chairs, several couches, and separate writing cubicles. This informal and comfortable learning setting accommodated as many as 21 students and 5 tutors.

Measurement Systems

Dependent variables. Programmed self-instructional materials in the basic skill areas, reading, writing, and math, were used as an educationally relevant dependent variable to assess the number of lessons completed by each student each school day. The lessons were arranged so that a student began at lesson 1A, and contingent on a score of 90% correct, the student could proceed to lesson 2A. If a student failed to achieve 90% correct on any lesson (1A), he or she must complete the following lesson (1B) in the same series. These self-instructional materials allowed the student to be self-paced.

In order to assess the number of lessons each student completed per day in the learning setting, a permanent product system of data collection was employed. Upon comple-tion of an assignment, the student self-graded the lesson, recorded the score, and handed the assignment in. A staff member graded the work, recorded it, and placed it in a pick-up basket to be

retrieved by the student. The student then reviewed the graded work and placed it in his or her notebook. A student's lesson was considered completed after it passed through the above sequence and was secured in his or her workbook. On a weekly basis, an observer counted the number of completed lessons in the three academic areas of reading, writing, and math in each student's workbook. These data were recorded on a recording sheet and graph.

Reliability of permanent product measurement was achieved by having a second observer count the number of lessons completed each school day for each student. The observers' records were compared for occurrence reliability only. An agreement was scored when the two observers scored the same number of lessons completed in a given academic area for a given day. Percent of agreement on a given academic area was calculated by dividing the number of agreements by the total number of days on which lessons were completed in that academic area. The observers reached a total percentage of agreement of 100%.

Independent variables. To insure that the self-regulation skill program was systematically implemented, the teacher followed an outline/checklist form in each interview (see Appendix for a sample protocol). Observations revealed that the checklist was followed in 100% of the meetings.

Procedures

A sequence of teacher-student conferences delivered the self-regulation skill package. Initial conferences lasted about 50 minutes with subsequent conferences gradually decreasing in length to about 10 minutes. An effort was made to hold individual conferences every 5 to 10 school days; however, this varied according to student attendance and demand. All conferences were specified by a written treatment protocol in checklist form. The first three conferences introduced the components of the treatment sequence. Subsequent

conferences provided review of the components and emphasized evaluation of progress and the establishment of new goals. The self-regulation package was tailored to meet the students' individual needs. Thus, frequency of meetings and individual goals were largely determined by the students.

Each conference protocol used a similar series of teacher responses to encourage and shape the student's acceptance and under-standing of the skills to be taught. These teacher responses or re-quests included: a greeting, a verbal rationale, student verbal rehearsal, written practice, corrective feedback, and a verbal review of previously taught skills. This series of teacher responses was employed to introduce and teach each of the following four specific components in the self-regulation skill package: the use of a behavior contract, which included academic goal setting, task analysis and specification of self-contingencies; self-recording procedures; self-evaluation; and self-reinforcement.

Initial Conference

The behavior contract. In the first conference, the behavior contract was introduced. This standardized form was used as a worksheet to be completed in writing by the student (See Appendix for a sample contract). The teacher explained the worksheet to the student and supplied a verbal rationale for its use. For example, the teacher might say: "This form will help you identify what academic area you would like to work on this week. It will also serve as a reminder of the specific lessons you may want to do."

Thus, the contract form provided an opportunity for the student to make a statement of intent, and to focus his or her academic performance on a particular area. Furthermore, the contract provided space for goal setting, task analysis, and the initial specification of possible self-delivered contingencies.

On this contract worksheet, the student was encouraged to indicate one basic skill area (e.g., writing, math or reading) that he/she wanted to improve and to indicate the reasons for a specific effort in that academic area. In order to prompt these reasons, the teacher reviewed the student's previous work and discussed the areas that needed improvement. The student was encouraged to first verbalize his/her reasons for completing academic work. The teacher provided prompts by saying, "Why would you want to improve your math skills?" If early prompts yielded few responses from a student, the teacher offered more prompts (e.g., "Do you need math skills for your job?" "What about balancing a checkbook or figuring your paycheck?"). The teacher made an attempt to anchor a rationale to immediate and practical issues in the student's life. To learn math or to graduate from high school may be too abstract for the teenager to appreciate the immediate consequence of completing academic work. On the other hand, prompts such as to figure a bank balance, a discount on a sale item, or to determine whether one's paycheck was figured correctly, provided more immediate and realistic rationales from the student's life. In subsequent conferences, the students' reasons for their goal achievement were reviewed. Verbal prompts from the teacher encouraged the students' verbalizations about their personal rationales for academic work.

Once the student had targeted an academic area and written his/her reasons for setting the particular academic goal, the teacher praised the student for thinking about this important issue and offered some suggestions that might help toward achievement of that goal. Thus, the first task analysis was introduced. For example, the teacher said, "You're right, Bill, those are good reasons for learning math. Now let's look at what is needed to do math at school." The student was then encouraged to verbalize a number of variables important to successful completion of the math lessons. These variables were:

where the work would take place, what materials would be needed, and how much time would be required to complete the assignments. Once these aspects of task completion were discussed, the student was encouraged to write them in his or her contract. The behavior targeted for intervention was then broken down into components by asking the student to describe the sequence of events surrounding the target behavior. The teacher might say, "What do you usually do in order to get your work done?" When the student needed prompting, the teacher provided a model, "When I get to school I do these things: (1) I take a minute to visit with my friends; (2) I review yesterday's work; (3) I get my work for today organized, (4) I read what is necessary; (5) I complete the work; (6) I check it for accuracy; and (7) I record my progress." Thus, an analysis of the sequence of the events surrounding the target behavior was modeled for the student. The student was then asked to verbalize a sequence that described his or her past performance and to think of possible events that may surround the target behavior. The task analysis provided the student and teacher with the information needed to identify the behaviors necessary for goal achieve-ment.

The final sections of the behavior contract worksheet asked the student to specify his/her recording and evaluation procedures and his/her self-reward. Both of these components are discussed in the following sections.

Self-recording. Self-recording was introduced in the same fashion as the other self-regulation components. First, the teacher supplied a verbal rationale for self-recording of the student's lesson completion. Second, the materials for self-recording (graphs, coversheet) were given to the student at which time the teacher modeled a recording technique by recording on a graph some of the lessons the student had completed during baseline. The student was then encouraged to complete the graphs by self-recording the remainder of the

baseline data. This procedure provided an opportunity for written practice as well as an opportunity for corrective feedback.

Self-evaluation. When the baseline data had been recorded, the student was introduced to the self-evaluation procedure. First a verbal rationale was provided for its use. The teacher might say, "When I want to know how much work I have done, I review my records, and this gives me a real concrete idea of how much I have left to do;" or "Many times I've observed that students don't really know how much work they have done until it's mid-term. It's a good idea to know so you can decide how much you want to get done before mid-term grades." The teacher strived to provide rationales that were relevant to the individual. Evaluative statements were modeled by the teacher in regard to the students' baseline data including praise for the student's accomplishments. The teacher ensured that this interaction was not punishing of a student's lack of lesson completion. For example, the teacher modeled the evaluative statement, "Last week I completed three math lessons. That was good." Then the student was asked to look at his/her graphs and to make evaluative statements. The teacher provided feedback as necessary.

Self-reinforcement. At this time, the notion of self-reward was introduced. The teacher began teaching this component by saying, "Let's review the sequence of events surrounding your success in lesson completion." The student was encouraged to verbalize what occurred on the day(s) of his/her successful lesson completion during baseline. The events immediately following his/her task completion were reviewed to identify possible reinforcing variables. For example, the teacher said: "What did you do immediately after you completed these assignments?" Contingent on the student's response, the teacher either had the student write his/her possible reinforcer on the contract or provided further prompts.

The student and teacher then reviewed the completed contract form. Any refinements resulting from the discussion were made. This usually involved specification of the number of lessons to be completed the following week. The student was then instructed to secure a copy of the contract in his/her notebook and to refer to it daily upon arrival at school before starting to work. The student was praised for his/her participation in the conference and the next conference date was established.

Second conference. The second self-regulation conference was opened with a review of the previous conference. The teacher reviewed the rationale for the student's participation and prompted a discussion of the student's reasons for participation in the program. The behavior contract was then discussed in light of the past week's work. The student's self-recording for the previous week was reviewed and corrective feedback was provided if needed.

Three aspects of self-regulation were then emphasized: evaluation, new goals, and self-reward. Self-evaluation was prompted by the teacher. As in the initial conference, the teacher modeled statements of progress. In addition, the student was prompted to verbalize self-evaluative statements: "Your graphs look good. How would you summerize your success in lesson completion this week? What comparisons could you make between last week's and this week's work?"

The teacher ensured that the student considered the number of lessons completed as well as the student's success in performing academic tasks in the proposed sequence of events outlined in the task analysis. Thus, evaluation was not confined to only lesson completion, but included the student's awareness of his or her ability to control the variables important to task completion. The teacher encouraged comparisons between what the student proposed and what he/she actually did. Refinements were made in the task analysis and

the behavior contract was amended. For example, if a student intended to complete his/her work prior to lunch but reported completing lessons after lunch, the contract was amended to reflect the change.

After the student evaluated his/her previous week's work and contingent on the student's verbal report of his/her success, the student established future goals. In some cases, the student may not have met his/her criteria so goals were retained or reduced. Thus, further refinements to the written contract were made.

Finally, the self-reinforcement was reviewed and discussed. The teacher said: "Let's see, it says here you were going to go home after your work was completed. What did you do?" If the student recalled that he/she went into the lounge to have a soft drink and visit with friends immediately after his/her work was completed, the teacher would then say, "Let's change this analysis then to include what you did immediately after you completed your lessons." In this fashion, the teacher began a further investigation of self-reinforcement as it related to the particular individual.

The notion of self-delivered reward was reviewed in light of the previous week's reported experiences. The student was prompted to verbalize his/her rewards and encouraged to write them. The teacher then encouraged the student to withhold self-delivery of proposed reinforcers until his/her lessons were completed each day. The refined contract was briefly reviewed, secured in the students' notebook, and the next conference date was set.

Third conference. By the third conference, most students were familiar with the various components of self-regulation. The self-recording, self-evaluation, self-reinforcement, and goal-setting components were reviewed in the same sequence in subsequent conferences. In the third conference, the student was encouraged to initiate verbal discussion and written refinements

regarding the components. For this and future conferences, a goal sheet was used (See Appendix for sample goal sheet). The goal sheet functioned as an addendum to the behavior contract by providing an annotated contract that was less structured than the behavior contract. As a student raised his/her goals, or changed them from one area to the next, the goal sheet provided a written document of this intent. The original and refined behavior contract remained in the student's notebook. It was not rewritten unless a student changed the topography of the established sequence.

On the goal sheet, spaces were provided for the students to state self-determined criteria for their goals and rewards, as well as any comments they wished to make to the teacher at the next meeting. By the third conference many students indicated a desire to complete more than one academic goal that week. These new additional goals were also listed on the goal sheet. All materials were reviewed and secured in the students' notebook. The next conference date was set.

Subsequent conferences followed a written protocol that included a review of the self-regulation components, any corrective feedback needed, amendments to the original contracts, and completion of new goal sheets.

Experimental Design

A multiple-baseline design across academic areas was replicated over nine students. During baseline, the number of lessons completed by a student in each of the basic skill areas, reading, writing, and math, was monitored without intervention. Following a period of stable behavior in baseline, the self-regulation achievement package was introduced in the initial conference. During this conference, the student chose one academic area as a target for his/her intervention. The remaining academic areas continued under baseline conditions. When the experimenter's observations and the student's

reports indicated successful goal achievement in the first academic area, the student was encouraged to target a second academic area for improvement in lesson completion. For some students, the final academic area became the target for intervention after the other academic area(s) appeared to be under the student's control. Thus, a multiple-baseline design across academic areas was employed to assess this procedure's impact on lesson completion in particular academic areas.

Results

Figure 1 represents the number of lessons completed in writing, math, and reading per school day by Mike, a non-LD student. A multiple-baseline design across academic areas was used to assess the number of lessons completed per day during baseline and a sequence of self-regulation (goal-setting) conferences. The number of lessons in each academic area targeted by the student for goal achievement is indicated by the hatched areas.

Insert Figure 1 about here

In baseline, Mike completed an average of .6 lessons in writing, and no lessons in either math or reading during 9 school days. During the first conference, Mike established math as the target for his intervention; his goal was to complete three math lessons per day. The academic areas, writing and reading, remained in baseline. During the math goals condition, Mike attained his goals five out of eight days and completed an average of 2.1 lessons per school day. He completed no lessons in writing and reading.

Following the math goals condition, Mike established goals in writing and reading; his previous goals in math were dropped. His goals now were to

complete three lessons in writing and three lessons in reading each school day. During this condition, Mike achieved his goals five of five days at an average of 3.0 lessons completed per day in writing and 4.2 lessons completed per day in reading. Mike's lesson completion in math fell to zero. At the third conference, Mike extended his goals in writing and reading for the next 15 school days. Thus, his goals were to complete four lessons in writing and three lessons in reading per school day. In that time, Mike achieved his goals 15 days in writing with an average of 3.6 lessons completed per school day, and 13 days in reading with an average of 6.1 lessons completed per school day. During this period, Mike also completed an average of .1 lessons per day in math which was not targeted.

At Mike's fourth conference, he combined all three academic areas for goal achievement over the next 27 school days. Thus, his goals were to complete seven lessons per day in writing, four per day in math and three per day in reading. Mike achieved his stated goals 22 days in math, (averaging 4.3 lessons per day during this time), 18 days in writing (averaging 7.1 lessons per day), and 25 days in reading (averaging 6.4 lessons per day).

Following the 27th day of Mike's last goal achievement period, he completed the basic skills math package and dropped it from his goals. For the following four days, Mike's reading and writing goals remained unchanged, and he completed an average of 7.0 lessons per day in writing and an average of 6.0 lessons per day in reading. Mike then dropped his previous writing goals to concentrate on his reading assignments. During this time, Mike's writing lesson completion dropped to zero, his math lesson completion remained at zero; however, he raised his reading completion to an average of 15.5 lessons per day for two days. At Mike's last self-regulation conference, he reduced his writing goals to five lessons per day, began an algebra program targeting

two lessons per day, and raised his reading goals to seven lessons per day. In this final 13-day condition, Mike did not achieve his goals as consistently in writing (only three days, averaging of 3.1 lessons per day) or math (only six days, averaging 1.23 lessons per day). In reading, Mike met or exceeded his stated goals each day by completing an average of 8.0 lessons per school day.

Thus, a multiple-baseline design across academic areas was used to assess the impact of self-regulation conference sequence on the lesson completion of a non-LD adolescent male. In baseline, Mike completed a combined total average of .2 lessons per day in all three academic areas. Following the introduction of a series of self-regulation conferences, Mike increased his lesson completion to a high of 18.87 lessons per school day and never fell below a total of 7.2 lessons completed per school day.

Concomitant with the overall increase in Mike's lesson completion and on-task behaviors, a number of anecdotal observations are worthy of note. Mike, like many other subjects, became more skilled in the accuracy and neatness of his self-recording as the study progressed. Furthermore, the time he allowed between conferences gradually increased as he reported more confidence in attaining his goals.

Mike's self-delivered reinforcers were established by his third conference. Early attempts to identify reinforcers resulted in Mike's verbal investigation of those things he could withhold until his work was completed. As the conference sequence progressed, Mike wrote in his journal that he had no need to withhold rewards, that work completion was reward enough.

Feedback from Mike and his parents contributed to the social validation of these procedures. During the conference sequence, Mike reported in his journal that: "It is getting easier (for me) to get work done at the beginning

of each day," and "I've met my goals for this week and I'm taking Saturday and Sunday off." Furthermore, Mike raised and changed some of his written goals independent of a particular conference. Mike's spontaneous adjustment of his goals and his successful goal completion indicated that he could apply self-control skills to suit his academic needs. On several occasions, Mike's mother reported that her son had begun to initiate conversations with her regarding his successful lesson completion at school. Given his history of truancy and noncompliance in the previous year, Mike's mother reported her pleasure that he had begun to behave responsibly towards his school work.

Figure 2 represents the number of lessons completed in writing, math, and reading per school day by a learning disabled student, Adam, during baseline and a sequence of self-regulation (goal-setting) conferences. The treatment effects were assessed in a multiple-baseline design across academic areas. The number of lessons completed in each academic area targeted for goal achievement is indicated by the hatched areas.

Insert Figure 2 about here

In a 10-day baseline, Adam completed an average of .5 lessons in writing, no lessons in math, and no lessons in reading. During the first conference, Adam set his goals in writing to complete one lesson each day for nine school days. Adam did not set goals in math or reading, thus, these areas remained in baseline. For the nine-day interim between the first and second conference, Adam met his goals in writing seven out of nine days, with an average of 1.4 lessons completed each day. No lessons were completed in math or reading. At Adam's second conference, he established his goals in writing at two lessons per day, while math and reading remained in baseline. During this seven-day

condition, Adam met his writing goals only on the first two days. On the third day, Adam completed only one lesson, and after the fourth day, he failed to complete any. Math and reading remained in their baseline levels until the fifth day of this condition. At that time, Adam amended his previous goals by himself to include the completion of three math lessons a day for three school days. Adam then proceeded to complete work in math for the remainder of this goal condition. Thus, for the second conference condition, Adam's goals of two completed lessons per day in writing were only reached in two days out of seven. His daily average in writing was .9 lessons completed per day. For the three days of Adam's math condition he attained his goals on one day, averaging of 2.0 lessons per day.

At Adam's third conference, he established goals in two areas: writing and math. For the next five school days he was to complete two lessons in writing and one lesson in math each day. Adam attained this goal four out of five days in writing with an average of 2.0 lessons completed per day, and five out of five days in math, averaging 1.2 completed lessons per day. At Adam's fourth and fifth conferences, his goals remained unchanged. In that 18-day period, Adam attained his writing goals on 12 days, completing an average of 2.1 lessons per day; in math he attained his goals on eight days completing an average of .7 lessons per school day.

By Adam's sixth conference, writing, math and reading were all targeted for goal attainment. In the ten school days following this conference, Adam set goals to complete three writing lessons, one math lesson, and one reading lesson per day. He attained these goals five days in writing, averaging 1.7 completed lessons per day; seven days in math, completing an average of .7 lessons per day; and in reading, he met his goals seven out of ten days, averaging .7 completed lessons per school day.

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Adam's seventh conference was interrupted and continued on the following Monday. At that time Adam changed his goals to meet the demands of a class. Thus, he raised his reading goals to two lessons per day, his math goals were unchanged, and he dropped his writing goals. For the first seven days of this 17-day condition, Adam met his math goals seven days with an average of 1.0 lessons completed per day. In reading, he met his goals four days with an average of 1.4 lessons completed per day, and no lessons in writing were completed. On the seventh day of this final condition, Adam dropped his reading goals independent of a conference. On that day, he established writing goals of four lessons completed per day while his math goals remained unchanged. Of the remaining 12 days in that condition, Adam attained his writing goals four days, completing an average of 2.6 lessons per school day. In math, Adam attained his goals seven out of 12 days, completing an average of .6 lessons per school day. Although Adam had dropped his reading goals, he continued to complete reading lessons at an average of .4 lessons per day.

Thus, a multiple-baseline design across three academic areas was used to assess the impact of a series of self-regulation conferences on the lesson completion of a learning disabled adolescent male. In baseline, Adam completed a combined total average of .2 lessons per day in all three academic areas. Following the introduction of a series of self-regulation conferences, Adam increased his lesson completion to an average of 3.27 lessons per day in the final condition.

In addition to Adam's increased academic productivity, a number of anecdotal observations are worthy of note. As the conference sequences progressed, Adam restructured his school day. He was observed doing independent work in the mornings rather than waiting until after lunch to complete his assignments. Following his first independent goal change, he no longer wrote

in his behavior contract. Instead, he employed the goal-setting sheet in his conferences to indicate his goals. At this time, Adam established his reinforcers to be Fridays off. Thus, he rewarded himself by taking Friday off from academic work. This reward is reflected in the data by the regular drops to zero at the end of every week.

Adam reported that the self-regulation program gave direction to his school efforts. He singled out the components specifically related to goal setting (i.e., task analysis and criterion setting) as instrumental because these components provided him with a constant against which he could measure his progress. He added that regular participation in the program provided structure that he needed to perform academic work. Finally, Adam reported that he "felt better" about his school work and himself following completion of the program.

Figures 3, 4, 5, 6, 7, 8, 9, 10 and 11 represent the number of lessons completed per school day by the remaining seven LD and two non-LD adolescents during baseline and throughout a sequence of self-regulation (goal-setting) conferences. The treatment effects were assessed in nine single-subject multiple-baseline designs, across three academic disciplines (math, writing, and reading). Targets for intervention are indicated by the hatched areas which represent the goals set by the students for themselves.

Insert Figures 3, 4, 5, 6, 7, 8, 9, 10, and 11

During baseline, all students were low in lesson completion. During the initial self-control training, LD and non-LD students alike began to increase their lesson completion in the targeted areas, while nontargeted areas remained at baseline levels. Throughout the conference sequence, all students' data

indicate the students' relative success toward increasing daily lesson completion. Some students appeared to have generalized goal setting skills to nontargeted areas (e.g., Figures 10 and 11), while others did not (e.g., Figures 3, 8 and 9).

The results of self-regulation procedures achieved in this study may be contrasted to the results achieved through adult-mediated procedures with the same students in an earlier study (Seabaugh & Schumaker, 1981). Table 1 displays the average number of lessons completed during teacher and parent conferences to be approximately .5 lessons per day for LD teenagers and one lesson per day for non-LD teenagers. After self-regulation training, LD teenagers produced eight times as many lessons per day, and non-LD youths produced five times as many lessons per day.

Insert Table 1 about here

Table 2 displays the mean grade level achievement scores of LD and

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Insert Table 2 about here

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non-LD students who received self-regulation training compared to the mean grade level achievement scores of the LD and non-LD students who did not receive self-regulation training at the beginning and end of the school year. The group averages are displayed in Figure 1 . In all three academic areas, LD students who received self-regulation training gained more than those who did not receive self-regulation training. Non-LD students who received self-regulation training achieved more dramatic gains than their non-LD peers who did not receive self-regulation training. Unfortunately, the non-LD teenagers

who did not receive self-regulation training were those students who demonstrated the highest achievement levels from the beginning to the end of the school year. Thus, these students' achievement gains may have been less dramatic due to a ceiling effect.

Insert Figure 12 about here

Discussion

Conclusions

Results indicate that when the self-regulation package was taught to adolescents in a series of student-teacher conferences, both learning disabled and non-learning disabled students increased their academic productivity (defined by lesson completion). When the academic productivity of both groups (LD and NLD) is compared to their respective performances under conventional teacher conferences and parent conferences (Seabaugh & Schumaker, 1981), self-regulation training produced greater increases in lesson completion.

Perhaps the best evidence of a treatment effect can be found in generalizations observed in several students. These occurred when a student changed goals from one academic area to the next or self-initiated an increase in his or her goals independent of a particular conference. In both instances, it appears that the students spontaneously applied the self-regulation skills to suit particular needs generated by the environment. Thus, when a student finished a sequence of lessons between conferences, and established new goals without adult prompts, the student was exhibiting a type of generalization as a result of training.

This study sheds light on observations from an earlier study (Seabaugh & Schumaker, 1981) concerning the difficulty of finding and delivering tangible reinforcers to adolescents contingent on their increases in academic productivity. In that study, a variety of adult-delivered reinforcers were employed to gain control over lesson completion using parent and teacher conferences. As these reinforcers were probed, their relative effectiveness was minimal and appeared to diminish over time. It was observed that students did not respond consistently to a particular adult-delivered reinforcer, and no single tangible reinforcer could be found that was effective across a number of students. In the present study, reinforcers identified and self-delivered by teenagers were of the nontangible type (e.g., free time, reported self-satisfaction) and relied heavily on peer interaction or other social delivery systems (e.g., time with friends, time "off" earned by completing work). Past attempts to reinforce academic behavior with tangible rewards met with little or no success; in some cases, the teenager became resistant after the introduction of a parent-delivered contingency. A review of the type of self-delivered reinforcers in this study reveals that these reinforcers are often inaccessible for adults to deliver. Thus, school programs attempting to deliver reinforcers for teenagers' academic work may fail due to the adults' inability to deliver the most powerful reinforcers.

Limitations

A number of single-subject design replications presented here show similar desirable results. All of these replications also share a number of limitations. Among them are: a lack of component analysis, all treatment procedures were conducted by the same experimenter, and the possibility that the experimenter's behavior acted as a reinforcer.

Among the most important limitation is the lack of a component analysis to select out the benign treatment procedures. A component analysis was not conducted largely due to two pragmatic considerations. The first consideration was an immediate need of parents and students for a relevant and efficient academic intervention. All subjects had long histories of truancy and many suffered severe academic deficits as a result. Because researchers have recommmended a combination of self-regulation procedures to ensure the strongest possible treatment effect, this procedure was designed to ensure the greatest possible impact on the target behaviors. Therefore, consumer demand dictated an intervention that would be most likely to succeed.

A second pragmatic consideration, from a treatment standpoint, is that several of these self-regulation components are almost inseparable from each other. For example, self-evaluation is difficult without an ongoing recording procedure. Also, the delivery system must maximize the possibility that the student understands the various self-regulation component skills. Thus, a verbal interaction (conference) was the delivery system of choice for a population whose academic deficits included reading problems. Also, time did not allow comparisons between verbal and written delivery systems.

The second limitation to this study is the possibility that the counselor was himself an important component of the package. Because the same teacher held all conferences, the treatment effect cannot be attributed solely to the procedures. Furthermore, the experimenter held a master's degree in guidance counseling; it remains unclear if others who are not formally trained in counseling could produce similar results.

The third limitation concerns the possibility that the teacher himself was acting as a reinforcer for academic behavior. Perhaps this may be qualified in light of a previous study conducted in the same setting (Seabaugh

& Schumaker, 1981), where two conventional conference procedures were conducted with the same students as in this study. When the effects of the self-regulation procedures are compared to those conventional teacher-implemented procedures, the self-regulation training is seen to produce more dramatic and long-lasting increases in the same students even though the conventional procedures (e.g., teacher encouragement and feedback in a conference format) were conducted consistently by the same experimenter as in this study.

Two final notes: First, the dependent variable in this study was a self-instruction package in three academic areas that provided well structured stimuli for student responses. Therefore, a particular student's success could be partially attributed to the regularity and conciseness of the dependent variable. It remains unclear, therefore, how this procedure will work when the dependent variable is an unstructured assignment similar to those given in a regular classroom.

Second, the cost effectiveness of this procedure was not formally assessed. Indeed, teacher or counselor time is expensive and difficult to spread over a large class. Conferences ranged from 10 minutes to 50 minutes in length. The longest conferences were found early in the conference sequence. As the students became more skilled, their recording and evaluation more fluid, and their rationales for behavior established, the conference length decreased. Furthermore, there was a considerable range among subjects in the number of conferences as well as the interim between conferences. Some students required weekly meetings while others met less frequently. Most students extended the interim between conferences as they became more skilled. Thus, throughout the conference sequence, the teacher time spent with individual students in conference slowly decreased. Although this decrease was observed, it was not formally assessed in this study.

Reductions in the length of the conference and increases in the interim between conferences indicate that an application of this procedure could be staggered in time across students and that teacher participation might be slowly faded with some students as new students begin the procedure. An investigation into this fading procedure will enhance the practicality of such a program. Students with learning problems could attend self-regulation conferences in a learning center. Over time, the system could be faded as the students were observed applying the skills in their regular classrooms.

Future Research Recommendations

Recommendations for future directions of research focus on the limitations of this study. One pressing issue involves the cost effectiveness. Therefore, a method of fading counselor contact that ensures generalization and maintenance is important. If this can be arranged, the self-regulation procedure may have widespread application. Students learn skills to increase on-task behavior and subsequent lesson completion, that may generalize to the classroom and even to home and work settings. The required teacher or counselor's time is greatest at the early stages of the intervention and minimal at its later stages. The teacher or counselor could treat a great many students in a cycle of conferences that gradually decrease in length while starting individual students at different times. A component analysis of this treatment package is desirable. Because the components appear to be closely interrelated, further analysis in an academic setting will yield valuable information to aid in the refinement of self-regulation procedures.

Further research questions could address the nature of the dependent variable used to assess the student's skill acquisition. It is recommended that procedure be used in a setting where unstructured, as well as structured, goals can be targeted for completion. Perhaps an investigation could apply

the treatment to structured assignments first and then to unstructured assignments in the same population of students, thereby shaping these students toward academic endeavors most like those found in a regular classroom.

Finally, a systematic replication of these procedures in a similar setting and population will aid in a greater understanding of the treatment effects. Perhaps several counselors/teachers could be taught to implement the training and thus demonstrate the robustness of the procedures.

It appears that self-regulation training designed to teach self-control over behavioral sequences may hold promise for classroom application. In addition to increasing academic productivity, the students reported feelings of increased control and mastery over their environment. The increases in academic productivity were reflected in increased on-task behaviors, ongoing and efficacious self-reward, and increases in the students' academic achievement levels. These behavior changes are encouraging results in a population whose predominant disabilities were noncompliance, low productivity, and low grades.

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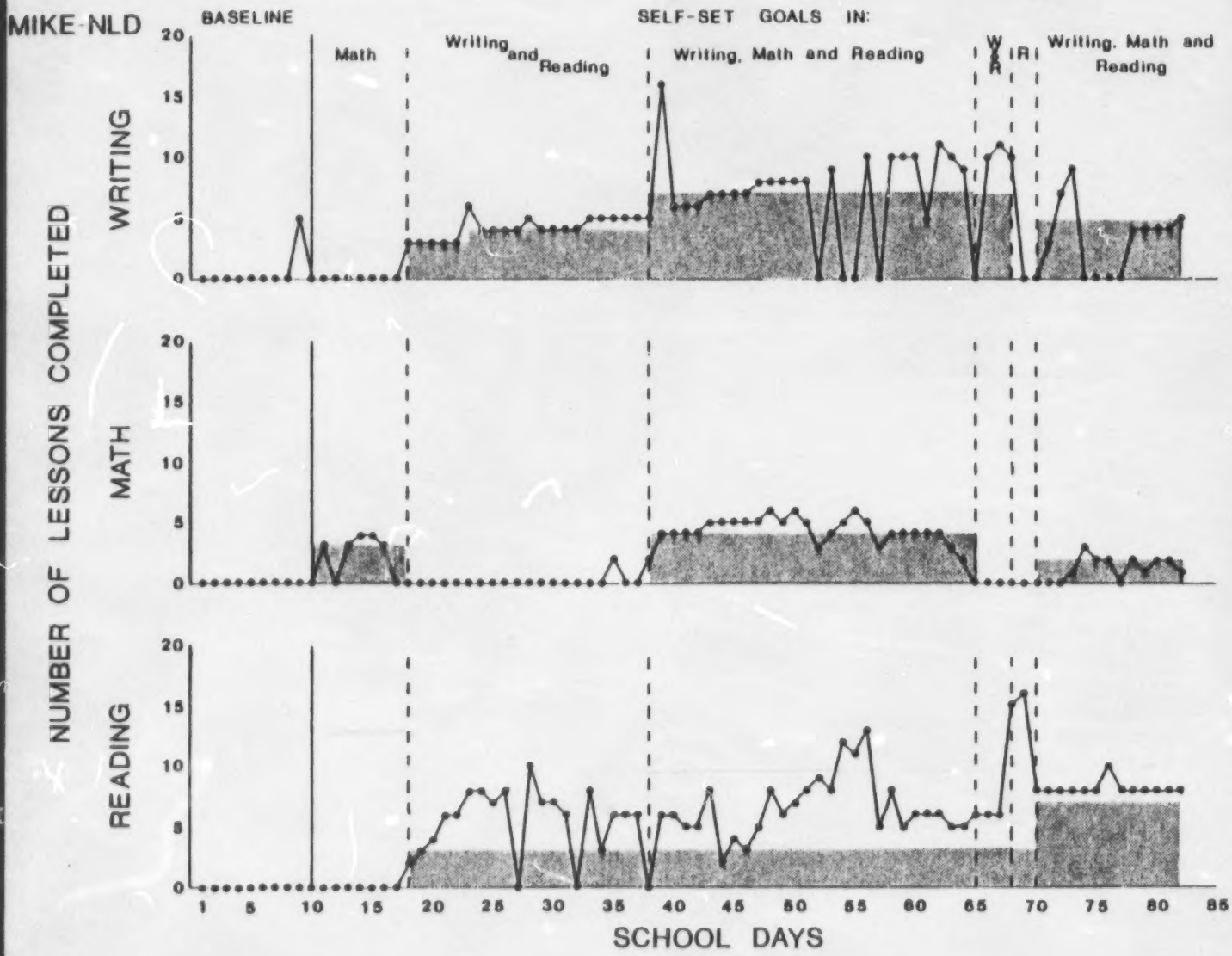
FIGURE 1


MIKE-NLD
BASELINE
SELF-SET GOALS IN:
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Writing, Math and Reading
WRITING
MATH
READING
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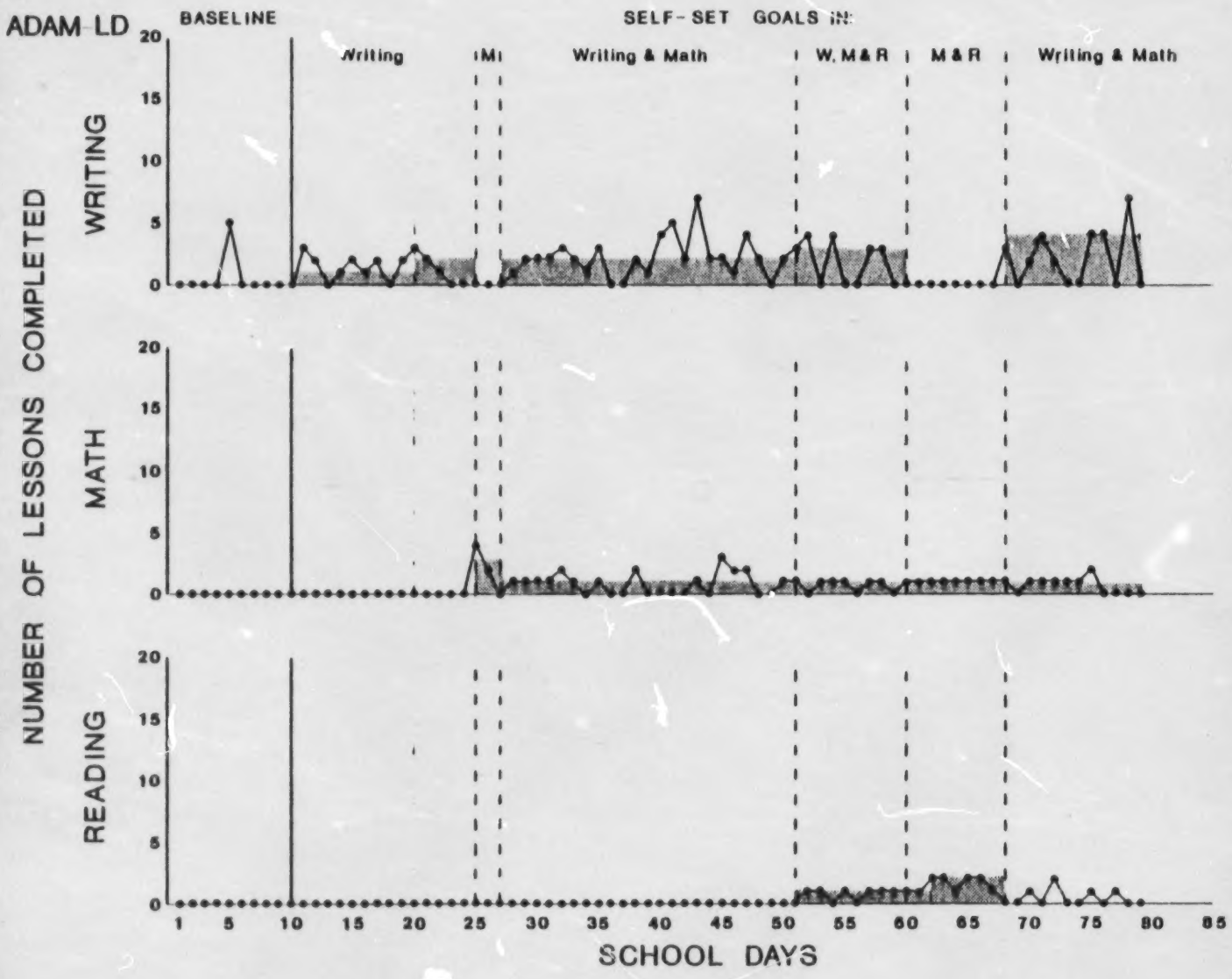
SCHOOL DAYS

FIGURE 2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BASELINE
SELF-SET GOALS IN:
Writing
Writing & Math
W, M & R
M & R
Writing & Math
NUMBER OF LESSONS COMPLETED
WRITING
MATH
READING
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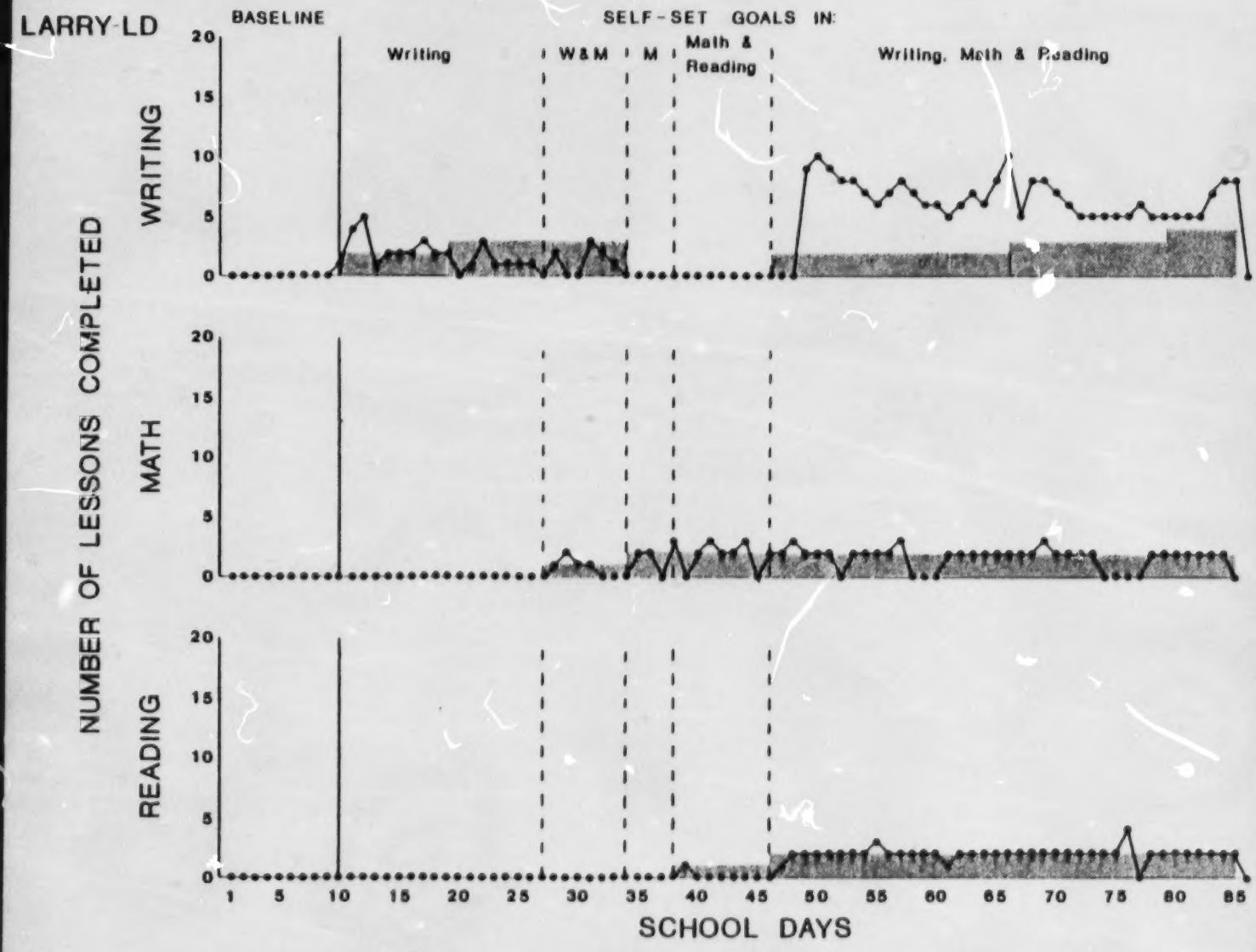
SCHOOL DAYS

FIGURE 3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Writing
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M
Math & Reading
Writing, Math & Reading
WRITING
MATH
READING
NUMBER OF LESSONS COMPLETED
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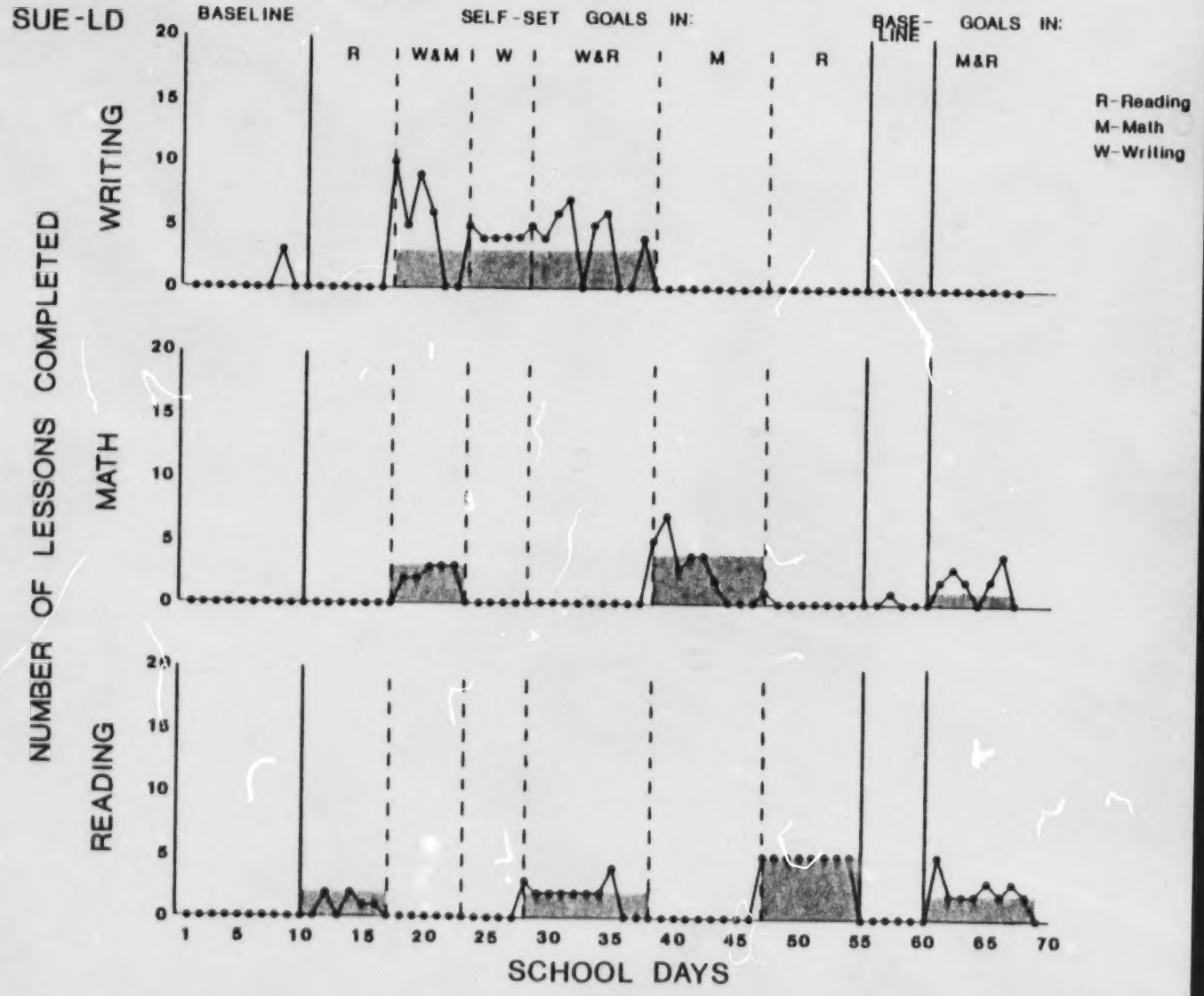
SCHOOL DAYS

FIGURE 4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BASELINE
SELF-SET GOALS IN:
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W&R
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R
BASE-LINE
GOALS IN:
M&R
R-Reading
M-Math
W-Writing
NUMBER OF LESSONS COMPLETED
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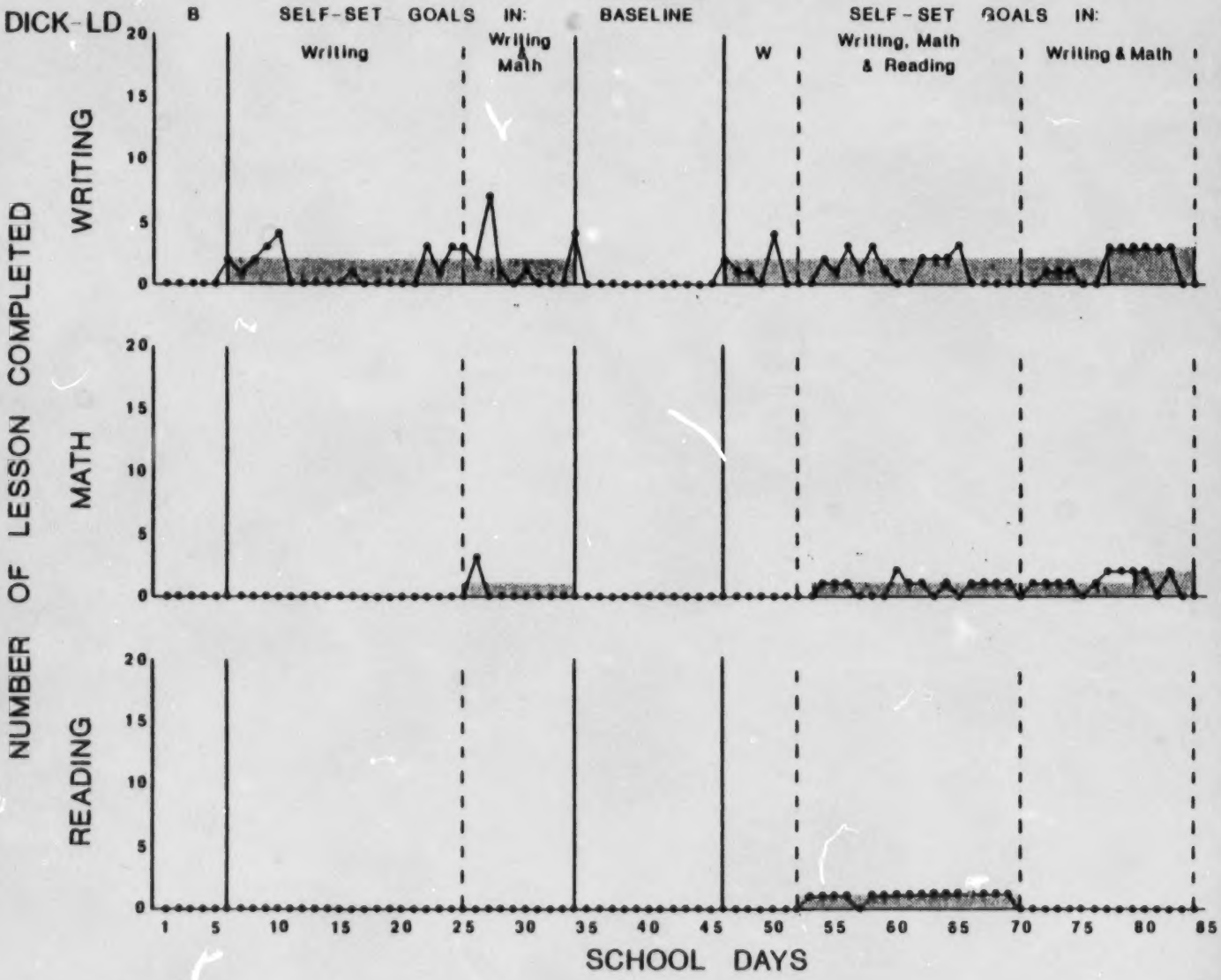
SCHOOL DAYS

FIGURE 5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B
SELF-SET GOALS IN:
Writing
Writing & Math
BASELINE
W
SELF-SET GOALS IN:
Writing, Math & Reading
Writing & Math
NUMBER OF LESSON COMPLETED
WRITING
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READING
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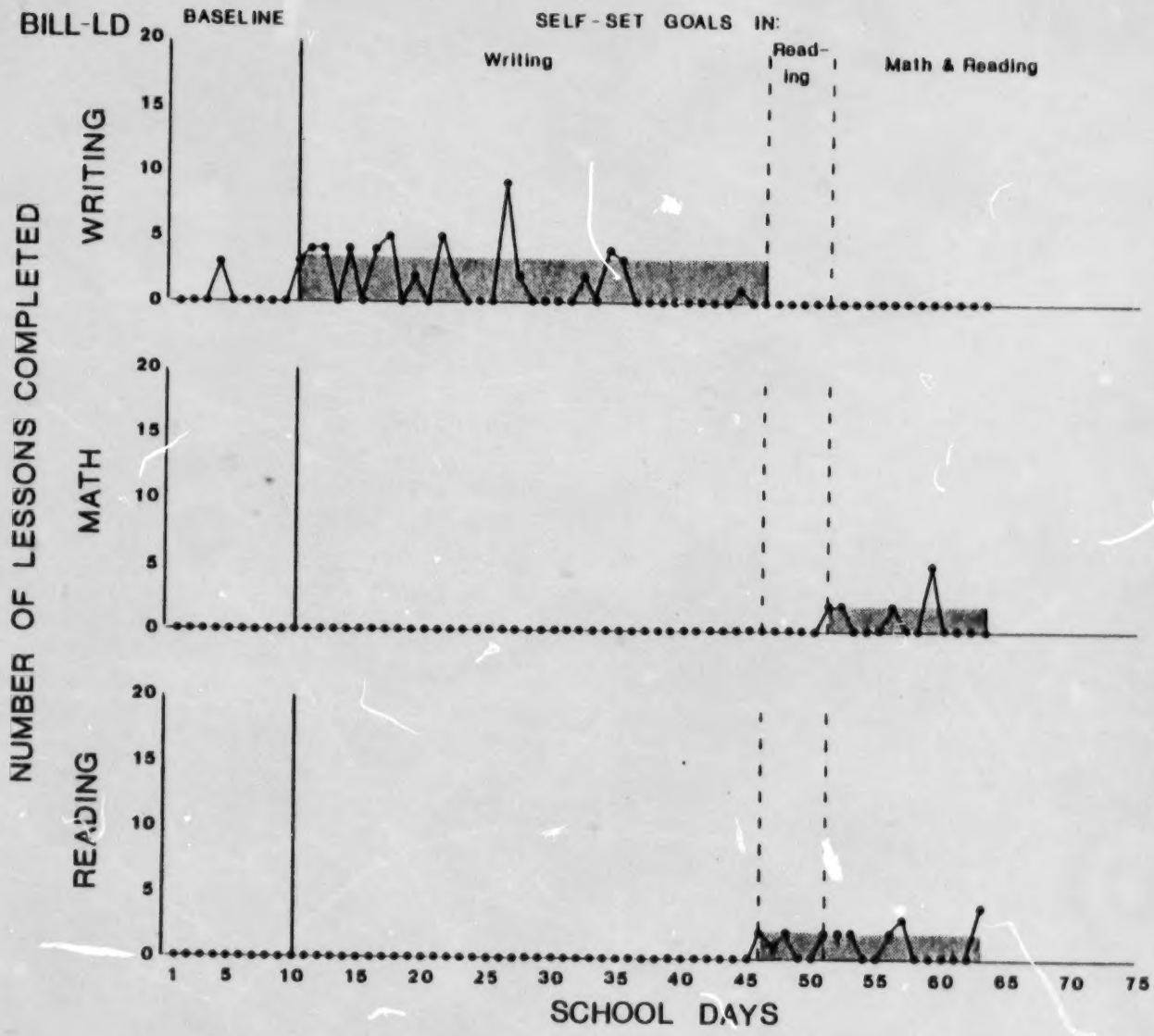
SCHOOL DAYS

FIGURE 6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SELF-SET GOALS IN:
Writing
Read-ing
Math & Reading
NUMBER OF LESSONS COMPLETED
WRITING
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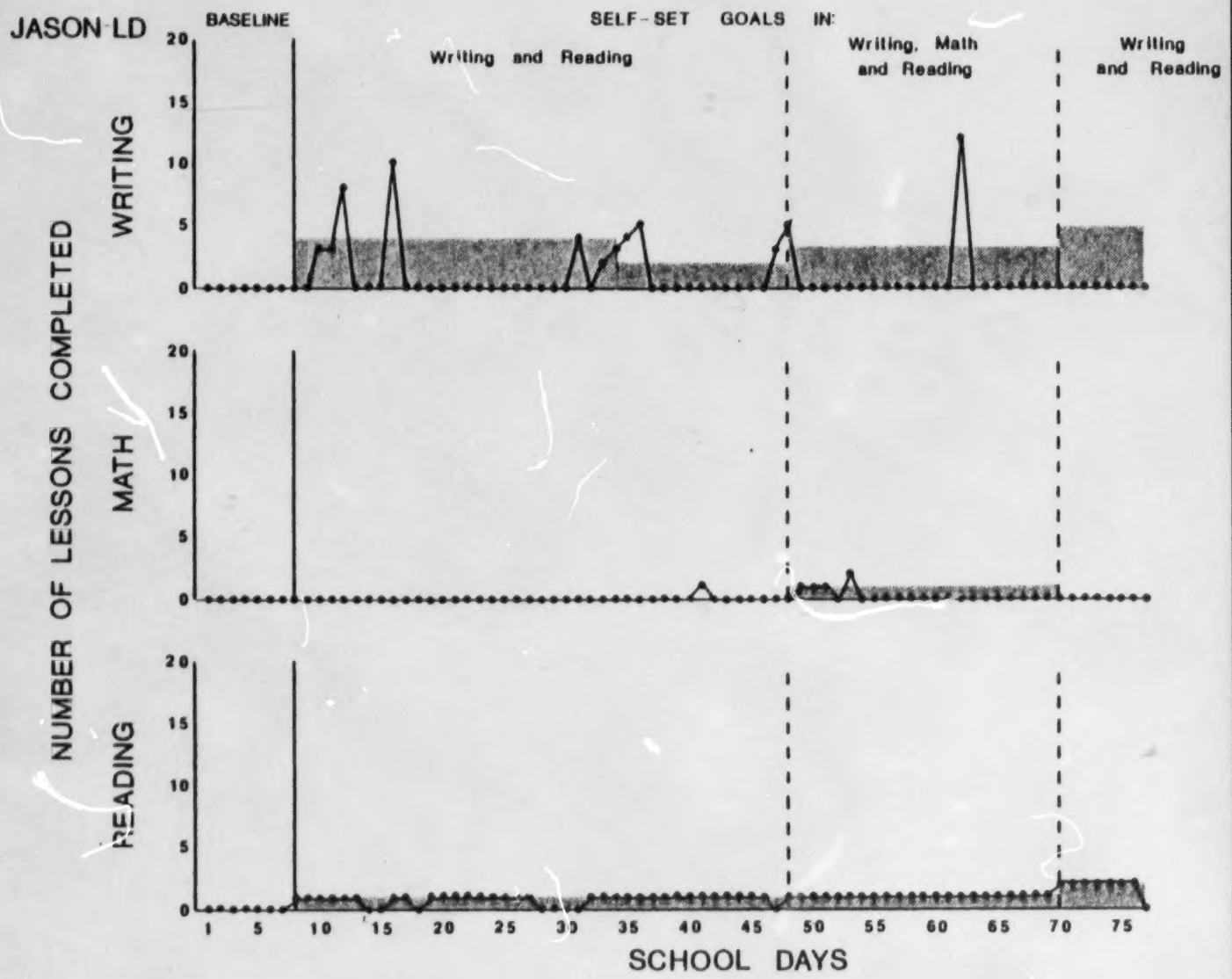
SCHOOL DAYS

FIGURE 7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SELF-SET GOALS IN:
Writing and Reading
Writing, Math and Reading
Writing and Reading
NUMBER OF LESSONS COMPLETED
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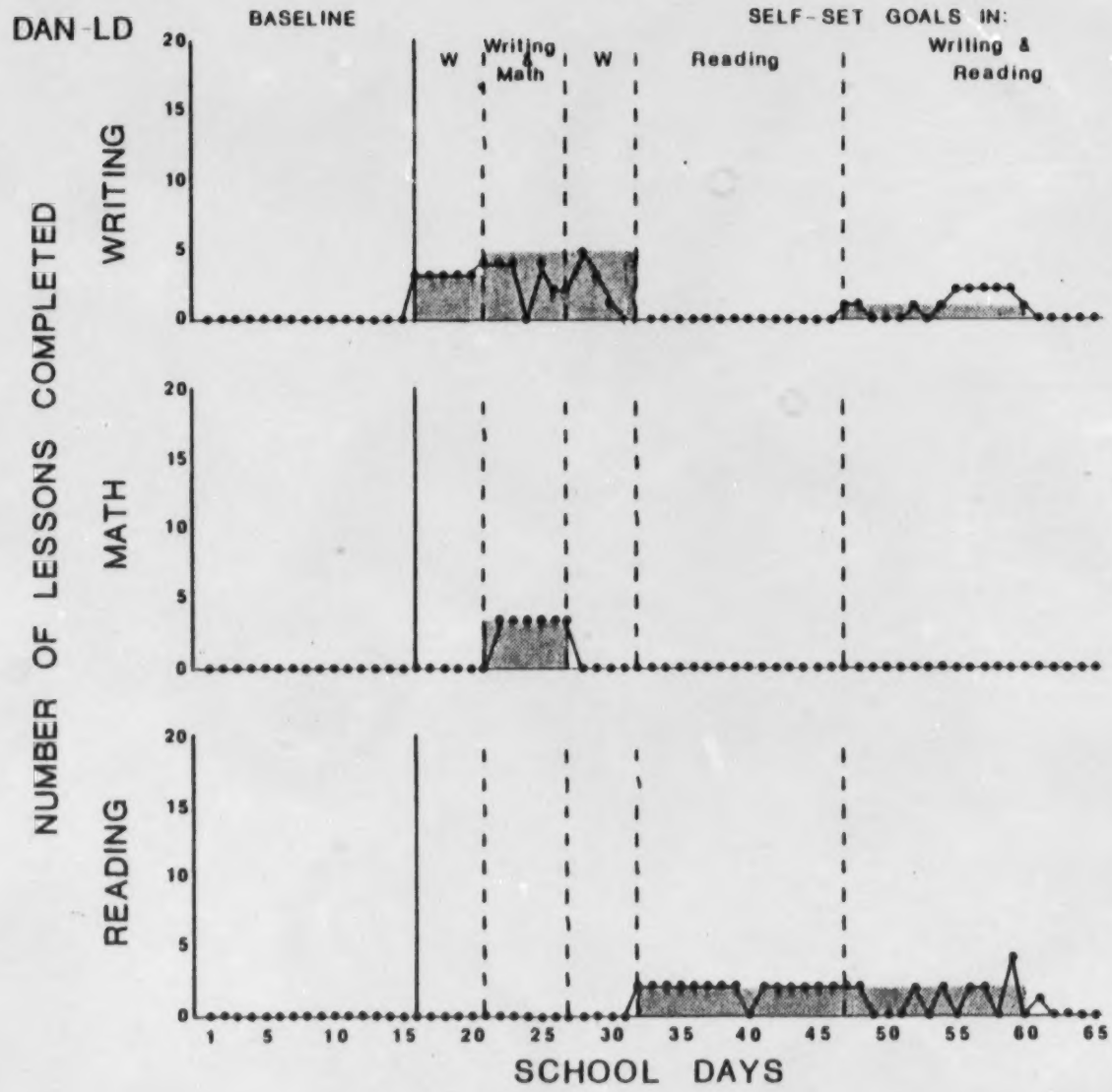
SCHOOL DAYS

FIGURE 8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SELF-SET GOALS IN:
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Reading
Writing & Reading
NUMBER OF LESSONS COMPLETED
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MATH
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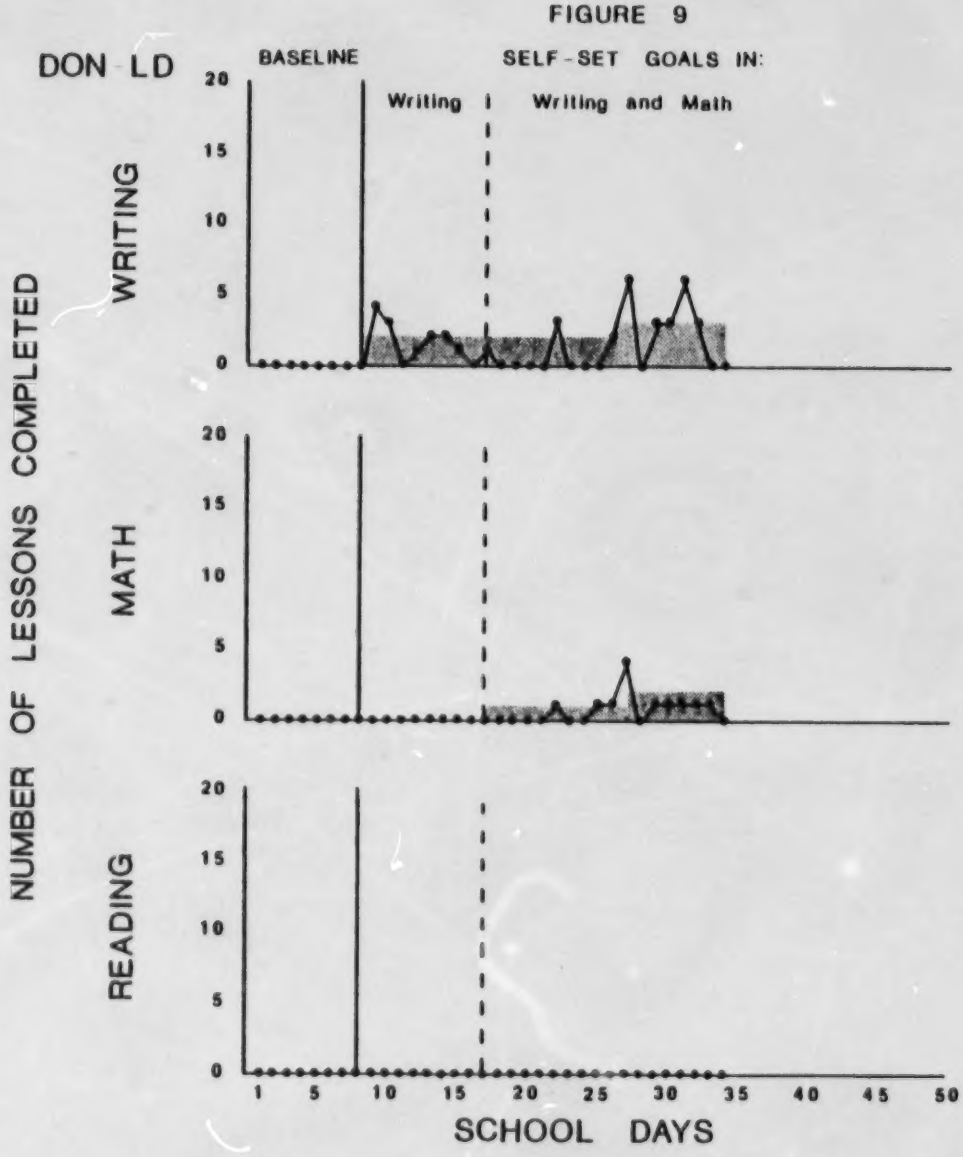
SCHOOL DAYS

FIGURE 9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Writing and Math
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MATH
READING
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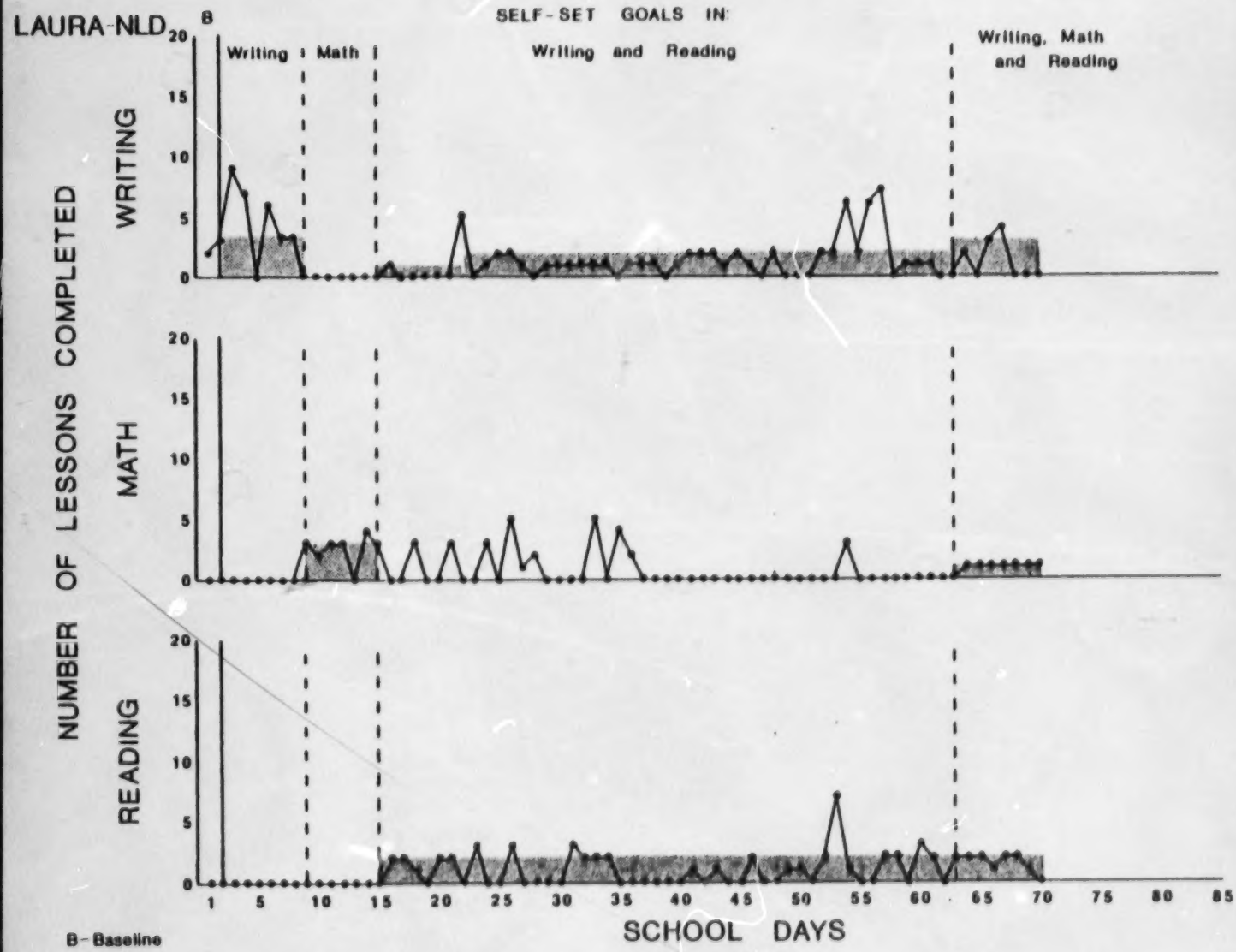
SCHOOL DAYS

FIGURE 10


LAURA-NLD
B
SELF-SET GOALS IN:
Writing
Math
Writing and Reading
Writing, Math and Reading
WRITING
MATH
READING
NUMBER OF LESSONS COMPLETED
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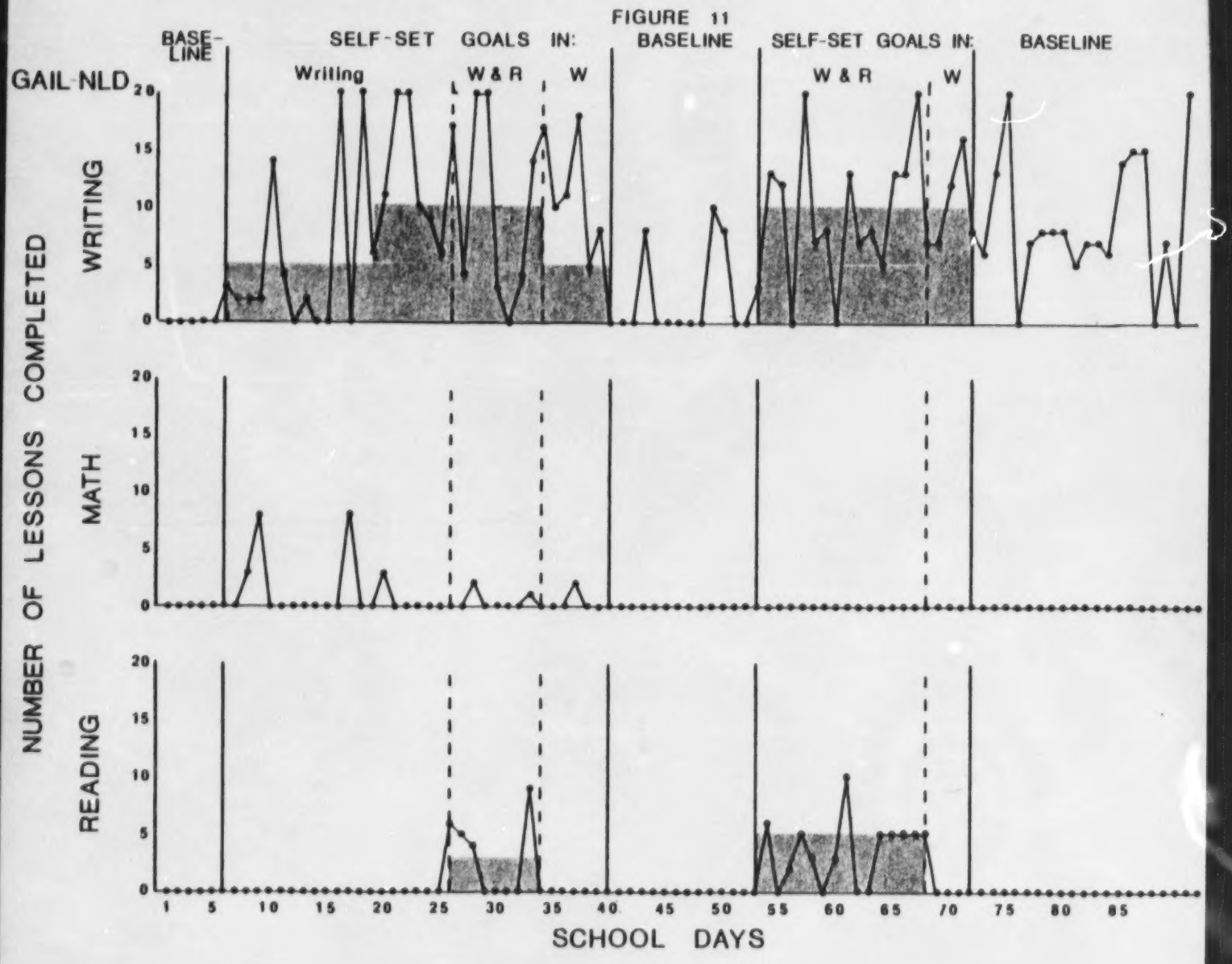
SCHOOL DAYS
B - Baseline

FIGURE 11


GAIL-NLD
BASE-LINE
SELF-SET GOALS IN:
Writing
W & R
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BASELINE
SELF-SET GOALS IN:
W & R
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BASELINE
WRITING
MATH
READING
NUMBER OF LESSONS COMPLETED
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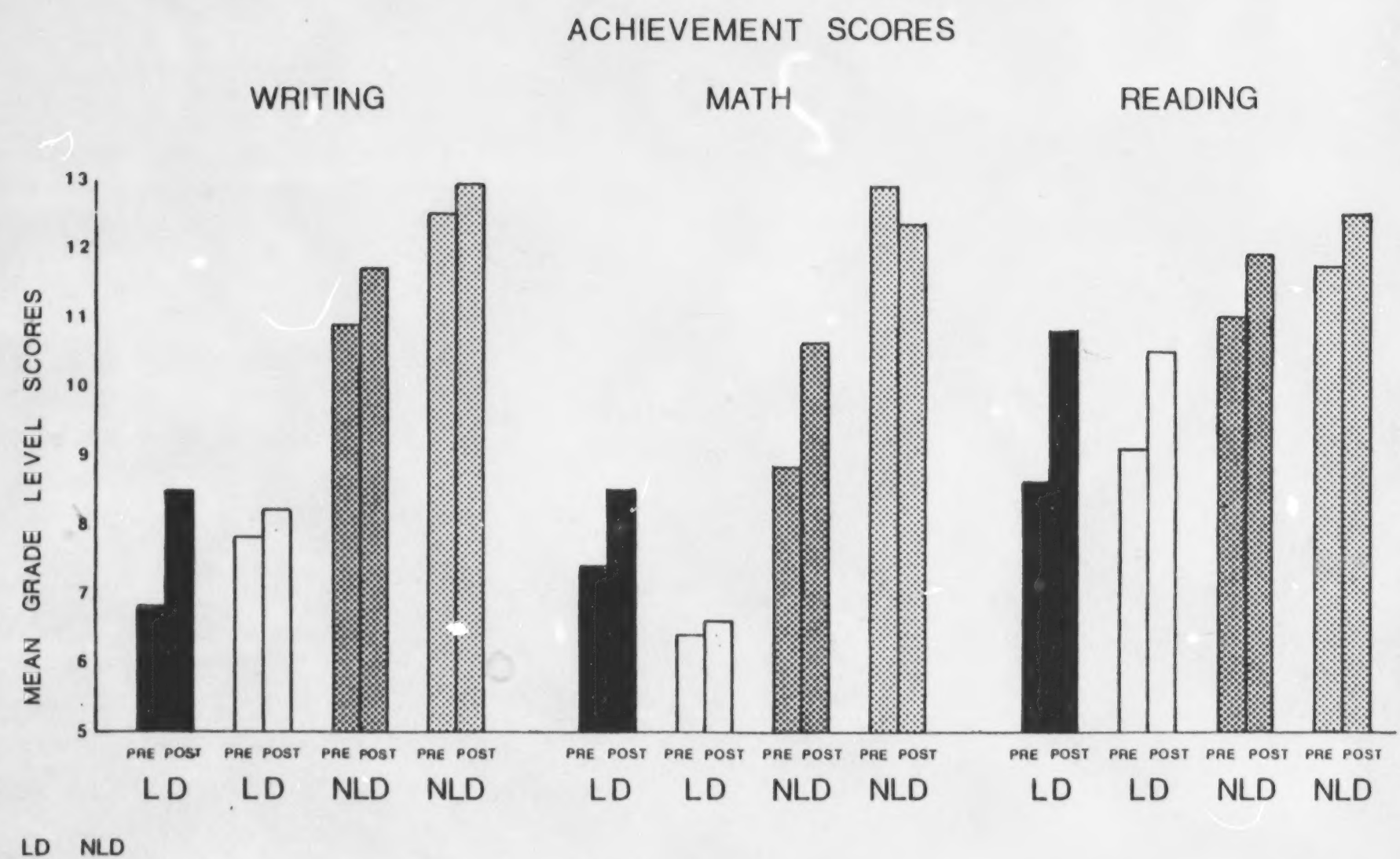
SCHOOL DAYS

FIGURE 12


ACHIEVEMENT SCORES
WRITING
MATH
READING
MEAN GRADE LEVEL SCORES
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PRE POST PRE POST PRE POST PRE POST
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PRE POST PRE POST PRE POST PRE POST
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LD NLD
Students who received Self-Regulation Training.
Students who did not receive Self-Regulation Training.

TABLE 1

AVERAGE NUMBER OF LESSONS COMPLETED DURING EACH CONDITION PER STUDENT PER DAY

	Adult Mediated Motivation Study			Self-Regulation Study	
	BASELINE	TEACHER CONF.	PARENT CONF.	BASELINE	SELF-REGULATION
LD	.14	.52	.57	.53	4.15
NLD	.11	1.03	.96	1.91	9.98

TABLE 2

Grade Level Results on the

Woodcock-Johnson Psycho-Educational Battery

Students in Self-Control		Grade Level					
		Math		Reading		Writing	
		Pre	Post	Pre	Post	Pre	Post
LD							
Jason		6.6	5.7	9.1	12.9	10.7	11.4
Adam		7.0	11.8	12.9	12.9	9.0	12.9
Bill		7.4	10.0	7.3	9.2	6.0	12.0
Dick		6.5	7.0	8.8	10.5	5.0	7.8
Dan		6.6	7.6	5.4	10.9	5.1	4.0
Don		6.5	8.2	12.9	12.9	8.6	10.0
Larry		8.1	10.0	8.8	8.5	4.5	4.1
Sue		10.5	8.8	5.6	8.5	6.0	6.2
	Total	59.2	68.9	68.8	86.3	54.1	63.4
	Group Avg.	7.4	8.6	8.6	10.8	6.8	8.5
NLD							
Laura		10.1	11.1	12.8	11.4	12.9	10.7
Mike		9.4	12.6	11.9	12.9	12.9	12.9
Gail		6.9	8.1	8.2	11.4	7.0	11.4
	Total	26.4	31.8	32.9	35.7	32.8	35.0
	Group Avg.	8.8	10.6	11.0	11.9	10.9	11.7
Students not in Self-Control							
LD							
Rick		5.2	6.4	8.8	12.9	10.7	10.1
Jerry		4.8	5.0	6.8	7.1	5.1	5.1
Mick		6.8	6.0	8.0	8.0	4.8	5.0
Carl		6.4	8.1	11.9	12.4	9.0	8.6
Kristie		8.8	7.6	10.1	12.9	9.0	12.5
	Total	32.0	33.1	45.6	53.3	38.6	41.3
	Group Avg.	6.4	6.6	9.1	10.6	7.7	8.2
NLD							
Sara		12.9	12.9	12.9	12.9	12.9	12.9
Anna		12.9	12.9	11.4	12.9	11.4	12.9
Grace		12.9	12.9	11.8	12.9	12.9	12.9
Rick		12.9	11.8	11.4	11.4	12.9	12.9
	Total	51.6	50.5	47.5	50.1	50.1	51.6
	Group Avg.	12.9	12.6	11.8	12.5	12.5	12.9

APPENDIX

New School

Contract Worksheet

Name _____ Contract with myself number _____

Counselor _____ Dated _____

1. Identify task(s) _____

_____

2. Reasons for performing above task(s) _____

_____

_____

3. Please specify where you are going to complete the assignment. _____

_____

_____

4. What time (in minutes) is required for completion of assignment.

_____ minutes/hours

5. Specifically, what materials will you need to complete the assignment. _____

_____

_____

6. Divide your assignments in to steps, and list in sequence of order to be accomplished.

a. _____

b. _____

c. _____

d. _____

e. _____

7. Specify how you are going to monitor your progress.

a. Graph _____ b. Permanent product _____

c. Cover sheet _____ d. Time-line _____

e. Other _____

8. Specify your reward for completing your assignments. _____

_____

_____

9. Did I reward myself for a JOB WELL DONE? _____

NEW SCHOOL

Goal Sheet

Name _____ Week of _____

Contract number _____

My goals this week are	My rewards are going to be	Comments to counselor
Goal I:		
Goal II:		
Goal III:		

Initial Conference

_____ 1. Greeting, make a positive statement regarding the student's participation.

_____ 2. Initiate a brief discussion of the student's test scores (include strengths and weaknesses).

_____ 3. Initiate a brief review of the student's number of lessons completed per day prior to this conference.

_____ 4. Provide the initial rationale for a student's participation in Goal Setting.

_____ a. Invite discussion about this student's long term goals.

_____ b. Invite discussion about this student's short term goals.

_____ 5. Invite the student's feedback.

_____ 6. Introduction of the Behavior Contract.

_____ A. Provide a verbal rationale for its use.

_____ A^{1}. Invite the student's feedback.

_____ B. Model possible contract entries.

_____ B^{1}. Invite the student's feedback.

_____ C. Encourage the student to verbally rehearse elements of the contract.

_____ C^{1}. Provide feedback.

_____ D. Encourage the student to engage in written practice of the Behavior Contract.

_____ D^{1}. Provide corrective feedback.

_____ E. Invite the student's feedback.

_____ F. Have the student WRITE his or her contract.

_____ G. Make a positive and supportive statement.

7. Introduction of the initial goal setting criterion.

   A. Provide a rationale for a goal setting.

   A^{1}. Invite the student's feedback.

   B. Model for the student possible goal setting responses.

   B^{1}. Invite the student's feedback.

   C. Encourage the student's verbal rehearsal of his or her possible goals.

   C^{1}. Provide feedback.

   D. Provide written practice of goal setting.

   D^{1}. Provide corrective feedback.

   E. Guide student in indicating initial written goals. (Make sure to program this student for success!)

   F. Have student indicate specific number of lessons.

   G. Invite student feedback.

8. Introduce the evaluation procedure.

   A. Encourage the student to verbalize his or her rationale for self-evaluation.

   B. Provide feedback.

   C. Encourage a review of baseline academic work.

   C^{1}. Provide feedback.

9. Introduction of a task analysis.

   A. Provide a rationale for the task analysis.

   A^{1}. Invite the student's feedback.

   B. Model the task analysis.

   B^{1}. Encourage the student's feedback.

   C. Encourage the student to verbally rehearse a task analysis.

   D. Provide written practice of the task analysis.

   E. Provide corrective feedback.

   F. Invite the student's feedback.

   G. Make a positive and supportive statement.

10. Initial identification of possible reinforcers.

    A. Provide verbal explanation of self-delivered rewards.

        1. short term (include information from task analysis to stimulate verbal behavior of favorite activities).

        2. long term (include information gained from student's rationale for academic behavior).

    B. Verbally explore student's revised task analysis to focus on the sequence of behaviors.

        1. encourage student feedback.

    C. Verbally explore student reported behavior sequence to identify possible reinforcers.

        1. invite the student's feedback.

        2. model explanation of possible self-delivered rewards (include self-disclosing statements regarding your self-delivered rewards, e.g., "After work, I go visit my friends.")

        3. invite the student's feedback.

    D. Have student write a description of possible reinforcers.

    E. Praise the student for appropriate possible reinforcers.

11. Introduction of self-recording sheet.

    A. Provide a verbal rationale for self-recording.

    A.1 Invite the student's feedback.

    B. Model the recording procedures.

    B.1 Invite the student's feedback.

    C. Provide written practice for recording.

    C.1 Provide corrective feedback.

    D. Invite the student's feedback.

12. Make a positive statement about the student's participation and summarize meeting.

13. Establish next meeting date.

Second Conference

1. Greeting, make a positive statement regarding the student's participation.

2. Initiate a verbal review of the rationale for the student's participation in the goal setting conference.

    1. long term

    2. short term

3. Review the Behavior Contract written at the last meeting.

    A. Provide praise for any success towards goals.

    B. Review rationale for behavior contract.

    B.1 Invite the student's rationale for the behavior contract.

    C. Provide feedback and praise the student's rationale.

    D. Make positive and supportive statements.

4. Initiate a review of the student's self-recording since the last meeting.

    A. Provide a rationale for self-recording.

    A.1 Invite the student's rationale for self-recording.

    B. Provide praise for any student's success in self-recording.

    C. Provide corrective feedback for self-recording.

    D. Provide written practice (if needed).

    E. Invite the student's feedback.

5. Review the evaluation procedure.

    A. Encourage the student to verbalize his or her rationale for self-evaluation.

    B. Provide feedback.

    C. Encourage a review of last week's academic work as self-reported.

    C.1 Provide feedback.

    D. Invite a discussion of the student's success in light of previously set goals.

        1. prompt this
        2. model (if necessary)
        3. provide feedback

6. Review of the task analysis written at last meeting.

   A. Review rationale for task analysis.

   A.[1] Invite the student's rationale for its use.

   B. Praise the student's rationale.

   C. Discuss behavior events that occurred surrounding the target behaviors in light of last meeting's task analysis.

   C.[1] Ammend in writing the task analysis to agree with the student's reported experience.

      1. model this

         Make sure that:

      2. the student participates in verbal rehearsal.

      3. the student participates in written practice.

      4. you provide feedback and praise.

7. Review established goals in initial meeting.

   A. Review rationale for goal setting (establishment of criteria)

   A.[1] Invite the student's feedback.

   B. Review the student's success in meeting his/her goals.

      1. provide feedback.

      2. praise any success.

8. Encourage the student to establish goals for the next meeting.

   A. Invite the student to verbalize his/her rationale.

   B. Model a rationale if student needs prompting.

   C. Verbally rehearse possible goals.

   D. Encourage the student to write his/her goals on the goal sheet.

   E. Praise and provide (corrective) feedback.

9. Reivew possible self-delivered rewards outlined in the last meeting.

   A. Have the student describe the events surrounding his or her successful task completion.

_____ B. Encourage the student to verbalize his/her success in the delivery of self-rewards.

_____ C. Refine the task analysis as it relates to self-delivered rewards.

_____ 10. Praise the student for his/her participation.

_____ 11. Establish the next meeting date.

Third Conference

_____ 1. Greet the student and praise him/her for participating.

_____ 2. Prompt the student to provide a verbal rationale for a goal-setting endeavor, provide feedback.

_____ 3. Review the student's self-recording since the previous meeting.

_____ A. Praise the student for self-recording.

_____ A.1 Provide corrective feedback if needed.

_____ B. Prompt the student's rationale for self-recording.

_____ B.1 Praise and provide feedback.

_____ 4. Evaluate with the student his/her success in meeting the criteria that were established at the previous meeting(s).

_____ A. Model verbal self-evaluative statement.

_____ A.1 Invite the student's feedback.

_____ B. Review a rationale for self-evaluation.

_____ B.1 Invite the student's feedback.

_____ C. Encourage this student to verbalize his/her success in goal achievement.

_____ 5. Discuss the TASK ANALYSIS.

_____ A. Prompt the student's rationale.

_____ A.1 Praise and provide feedback.

_____ 6. Discuss the sequence of behaviors surrounding any of the student's successes.

_____ 7. Verbally explore the possible reinforcers established at the previous meeting.

_____ A. Prompt the student's verbal evaluation of possible self-delivered rewards.

_____ A.1 Praise the student.

_____ B. Target a suspected reinforcer and discuss its self-delivery.

_____ C. Prompt the student to verbalize a rationale to withhold self-delivered rewards.

_____ C.1 Prompt this (Model a possible response).

_____ D. Provide feedback.

_____ E. Praise the student for his/her participation.

_____ 8. Introduce use of goal sheet.

_____ A. Provide verbal rationale.

_____ B. Model use of goal sheet.

_____ C. Encourage student to write his/her goals.

_____ D. Encourage student to indicate possible rewards.

_____ E. Encourage student to write any comments during the week that pertains to the goal achievement.

_____ 9. Establish next meeting time.

_____ 10. Deliver praise for the student's participation.

Subsequent Conferences

_____ 1. Greet the student, make a positive and supportive statement.

_____ 2. Encourage the student to share with you his or her self-recorded data.

_____ A. Deliver a praise.

_____ B. Provide corrective feedback (if needed)

_____ 3. Encourage the student to verbalize his or her self-evaluation to you.

_____ A. Provide praise for successes.

_____ 4. Encourage refinement of the task analysis as it relates to self-reinforcement.

_____ 5. Initiate a discussion of the possible self-reinforcement contingency.

_____ A. Refine previous self-delivered rewards in light of the student's reported experience.

_____ 1. model this

Be sure that:

_____ 2. the student verbally rehearses the delivery of rewards.

_____ 3. you provide praise and feedback.

_____ 6. Encourage possible increases in the student's goals for the following week.

_____ A. Prompt a discussion regarding the student's rationale for possible increases in goals.

_____ B. Have student write NEW goals on goal sheet (if applicable).

_____ 7. Make positive and supportive statements.

_____ 8. Establish next meeting time and date.